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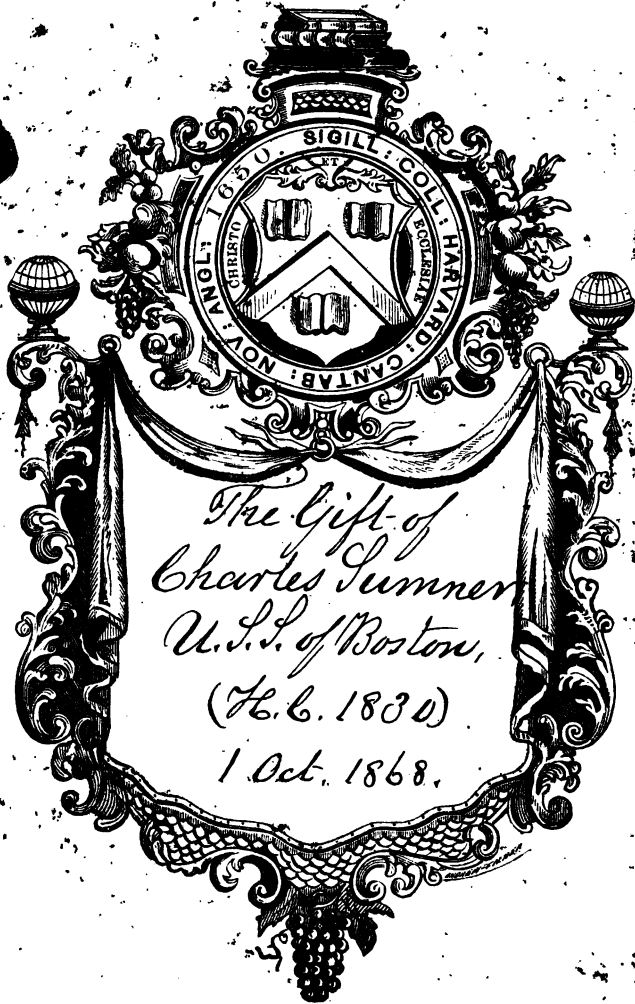
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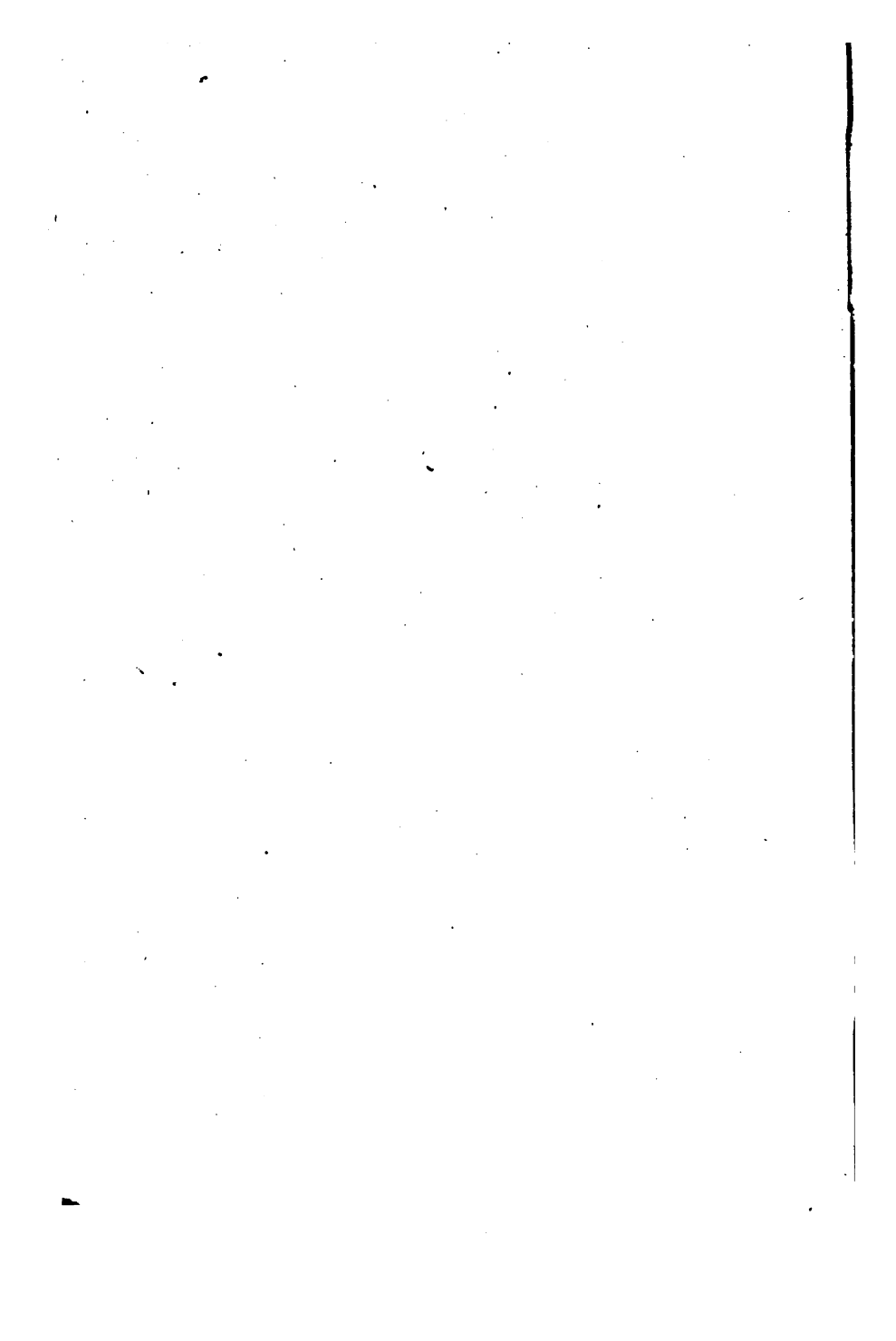
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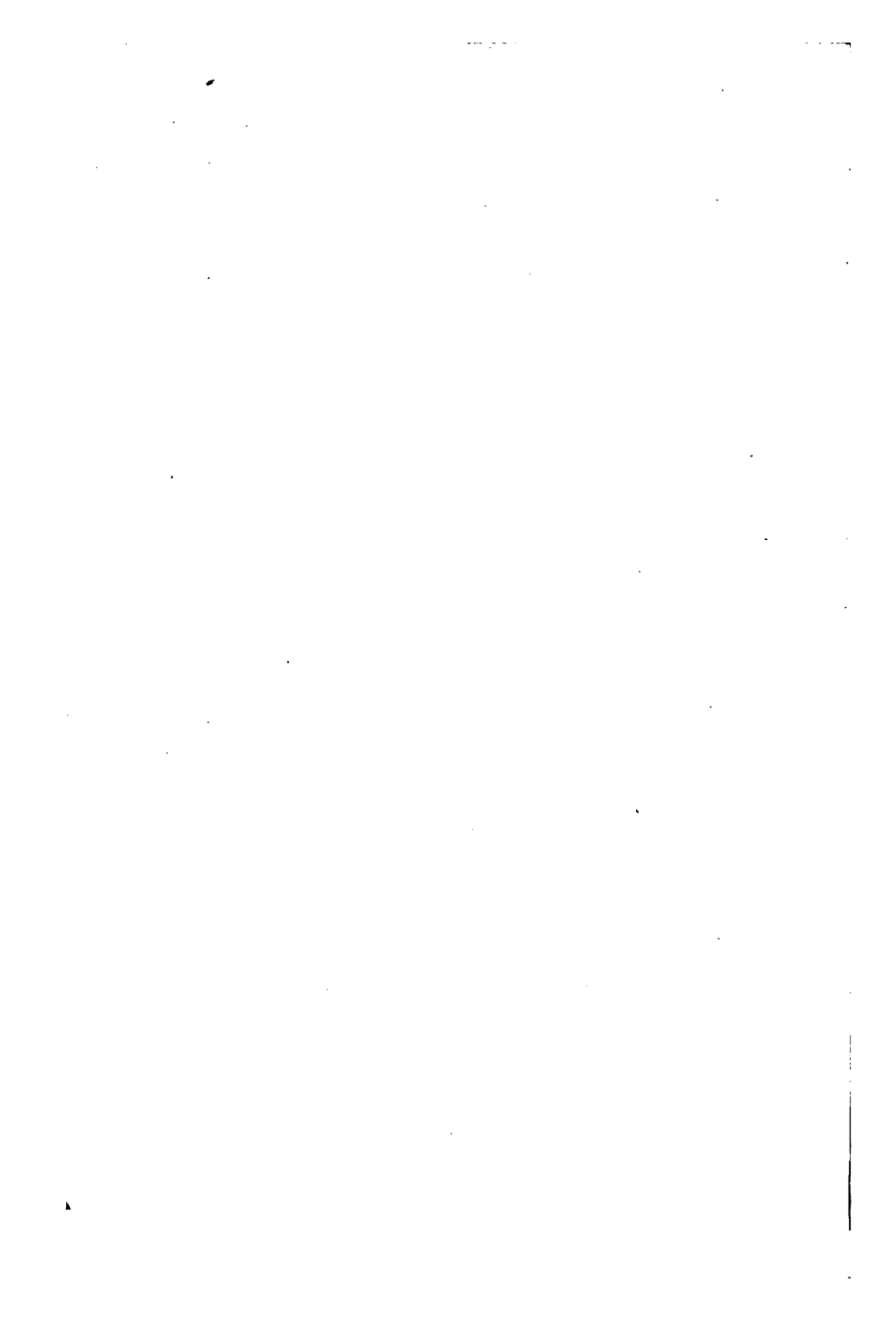
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THE FORCING AND DEFENCE OF DEFILES;

THE FORCING AND DEFENCE OF RIVERS, AND THE PASSAGE
OF RIVERS IN RETREAT;

THE ATTACK AND DEFENCE OF OPEN TOWNS
AND VILLAGES;

THE CONDUCT OF DETACHMENTS FOR SPECIAL PURPOSES;

AND

NOTES ON TACTICAL OPERATIONS IN SIEGES;

BY

FRANCIS J. LIPPITT,

LATE COLONEL SECOND CALIFORNIA INFANTRY; BREVET BRIGADIER GENERAL
U. S. VOLUNTEERS; AUTHOR OF TACTICAL USE OF THE THREE ARMS,
AND A TREATISE ON INTRENCHMENTS.

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THE SPECIAL OPERATIONS OF WAR.

These are

SIEGES ; or the Attack and Defence of Permanent Works,
or of Fortified Places.

The Construction and Use of MILITARY BRIDGES.

The Forcing and Defence of DEFILES.

The Forcing and Defence of RIVERS, and the passage of
Rivers in Retreat.

The Attack and Defence of open TOWNS AND VILLAGES.

The Conduct of DETACHMENTS for Special Purposes.

The Attack and Defence of Permanent Fortifications, and the Construction and Use of Military Bridges, belong to the art of Military Engineering. As these operations can be properly conducted only by professional engineers, some of whom are to be found on every general staff, and the learning relating to them not being indispensable to a Commander of Troops, they do not fall within the scope of this treatise. In regard, however, to the TACTICAL OPERATIONS, offensive or

defensive, connected with SIEGES, a summary will be given of all that is believed to be important.

We will, therefore, first treat of

THE FORCING AND DEFENCE OF DEFILES.

We shall consider

I. The ATTACK of a Defile.

II. The DEFENCE.

III. The Case of SEVERAL DEFILES.

I. The Attack.

1. The forcing of a defile properly occupied and defended will usually cause a great sacrifice of life, and is therefore resorted to only in urgent cases. There are few, if any, defiles that may not be either *turned*, or *gained by manœuvring*.

Thus, in Gen. Sherman's campaign of 1864, in our late war, his advance was checked by the mountain gap called "Buzzards' Roost;" which was guarded by the Confederate Army under Gen. Johnston, and which, by works of defence, had been rendered, it was said, impregnable. Nevertheless, Gen. McPherson, having been sent with three corps by a circuitous route to occupy the road leading to Resaca, a place some twenty miles in rear of the defile, Gen. Sherman vigorously attacking in front at the same time, to cover this manœuvre and so insure its success, Gen. Johnston, finding his position turned, and his communications endangered, was compelled to fall back; thus abandoning the defile, and leaving the route open to our army.

Again: On the 28th of August, 1862, the Confederate General Longstreet was hurrying up to join Stonewall Jackson,

who was nearly surrounded by superior numbers. On arriving at Thorofare Gap in Bull Run Mountain, he found its outlet barred by a Federal division under General Ricketts, with Windham's cavalry. The Federal artillery swept the narrow road through the Gap, while the Confederates could find no position for their own guns. Keeping a small force in reserve at the entrance of the Gap, and deploying several of his brigades to occupy the heights on either side, Longstreet sent five brigades to turn the Federal right; two of them by a mountain path not far distant, and the other three with two batteries, by Hopewell Gap, three miles to his left. The Federal commander engaged the troops in his front till dark; when, on being informed that the enemy were approaching Hopewell Gap in heavy force, by which movement his position would be turned before morning, he thought himself compelled to retire and rejoin his corps. Thus, by noon on the 29th of August, Longstreet was able to unite with Jackson, and take a decisive part in the Confederate successes of that and the following day.

2. Whenever we detach to turn a defile, we must *divert the enemy's attention from his flank* by an attack, or by threatening manœuvres in his front, according to circumstances. This course was adopted, as we have seen, by General Sherman at Buzzards' Roost. At Thorofare Gap, Longstreet had no occasion to attack for this purpose, since the Federal commander's own attack upon him operated as a sufficient diversion.

3. An enemy holding the outlet of a defile which we have to penetrate, not being easily accessible, may maintain his position for a considerable time with a comparatively small force. He can thus, without much risk, detach very largely to engage and drive back our turning detachment. Consequently, the

farther this detachment has to be sent from us, *the stronger it must be*, both in numbers and in composition ; and if its sphere of operation is to be beyond supporting distance, it should consist of all the three arms.

In order, moreover, to keep the enemy from sending too large a force to oppose the movement, just before our turning detachment has gained his flank, it will generally be necessary to attack him very vigorously in front.

It is obviously important to prevent, if possible, the enemy from having any notice of the march of our turning detachment, by seizing those points from which his pickets or patrols might observe it.

4. A pass only *slightly occupied* by the enemy may usually be gained by manœuvring with the main body, to distract his attention, while a detachment suddenly seizes it and intrenches.

5. In the attack of a defile, there are *three cases* :

- (1). The enemy may be in front of it.
- (2). He may be within it.
- (3). He may be in rear of it, ready to attack us on debouching.

A. THE ENEMY IN FRONT OF THE DEFILE.

1. In this case, the task is generally an *easy* one. By a vigorous attack with our whole force, if necessary, we have only to crowd the enemy back into the defile, threatening at the same time his flanks and to cut off his retreat. The effect of this combined movement is usually to make the enemy retire ; and the moment his retreat through the defile begins, the moral effect alone of his situation will often suffice to turn the retreat into a rout.

2. If our front attack fails, the attacking troops *fall back behind their reserves*. On a second attack being made, these troops act, in their turn, as a reserve.

B. THE ENEMY WITHIN THE DEFILE.

1. In this case, the task is a much more difficult one. However great may be our superiority in numbers, by engaging the enemy within the defile, we lose the benefit of it; for the combat can be only between the heads of the opposing columns, in which both fight on equal terms. In order to succeed, therefore, steps must be taken on our side *to destroy this equality*. To do this, our attack must be prepared by the play of artillery on the enemy's columns, which our round shot ought to plough through with fearful havoc; our infantry, meanwhile, being kept in reserve, under cover, to carry the defile with the bayonet, when the guns shall have made a decided impression.

2. Auxiliary to the attack in front, a detachment should be at the same time sent, when practicable, to attack the enemy *in rear*. The effect of such an attack, even when made by a small detachment, is usually decisive, if the attack in front be followed up, in the mean time, with fire and the bayonet alternately.

3. But the surest means that can be used in forcing a defile, and one which is indeed generally indispensable, is by *occupying the heights which flank it*. A defile is a door, the keys of which are the hill summits which command it. We can get no stable foothold in a defile so long as the enemy holds possession of its flanks; but from the moment we have possession of them ourselves, he can no longer stay in it.

In the first place, our light troops, once occupying the heights on each side, moving with the freedom of skirmishers, can sooner arrive at the rear of the defile than the enemy's columns marching through it, especially if engaged by us in front at the same time ; and they therefore threaten to cut off his retreat.

Secondly : The enemy's columns in the defile are exposed to an incessant plunging fire of sharpshooters from the heights, to which they can make no effective reply ; and which, if long continued, must destroy them.

This combination of a turning movement with an attack in front, will usually carry any defile, however strongly it may be fortified. For instance, the formidable mountain pass called the " Persian Gates," the front door entrance, as it were, into Persia, was defended against Alexander the Great by a wall built entirely across it ; behind which was a Persian army of 40,000 foot and 700 horse. But Alexander, while part of his force was storming the wall in front, occupied the heights with the remainder ; thus turning the position. The defile was not only carried, but the Persian army was nearly cut to pieces.

4. Therefore, to force a defile occupied by the enemy, whatever other means we may use at the same time, we should throw forward, at once, a heavy line of skirmishers to *seize the heights*, and drive away the skirmishers of the enemy. Strong supports should follow close behind, so that all resistance may be promptly overcome. If these should not be deemed strong enough, they may be followed by a reserve ; a part of which may be used to occupy and hold the posts taken.

5. Our skirmishers, while driving the enemy's troops before them, profit by every cover to pour down a destructive *plunging fire on the columns in the defile*, or else hurry on to *seize its*

rear ; or they may adopt both these measures at once, according to circumstances.

6. They should also *turn every battery* or barricade planted in the defile, and drive the defenders from them by a reverse fire.

7. The *main body* will meanwhile keep the enemy well occupied in front, to prevent him from reinforcing his flanks.

8. The enemy usually commits the fault of holding on too long to the defile. Our main body should take advantage of this by keeping close to him, so as to be able to rush on and *debouch, pell-mell, with him*. This will enable us to clear the defile before he can form to oppose us, and will paralyse the fire of any battery he may have posted in rear of the defile to play on the outlet.

9. In Napoleon's campaign of 1805, *a singular instance* occurred of the forcing of a defile by an inferior force, without the possibility of seizing its flanks, and without artillery.

A French division of 4000 men found itself on the point of being cut off from its main body, and of being surrounded by 30,000 Russians. The nearest of the enemy's columns, one of 8000 men, was marching upon them through a long narrow lane, admitting a front of only eight men, with a high stone wall on each side.

A few minutes' play with round shot through this lane, crowded with men, would probably have routed them, and cleared the defile. But this expedient could not be resorted to, as the French artillery ammunition was entirely exhausted. After a few moments' deliberation, a plan was adopted which was immediately put in execution, as follows :

The French, in column of sections, rapidly advanced into the defile, with bayonets at the charge. The leading section,

on closing with the head of the Russian column, charged with the bayonet, delivering their fire at the same instant. Under this fire the enemy's leading files went down ; while the French leading section, after delivering its fire, broke by both flanks, scaled the wall on each side, and fell back in rear of its battalion. This was repeated by every section successively ; fresh troops constantly succeeding each other, while the leading sections of the Russians were being constantly destroyed. This check to the progress of the head of the column caused a terrific pressure at the centre ; because the rear, ignorant of what was passing in front, was continually crowding forward. The disorder rapidly turned into a panic, which caused the terrified Russians to scale the walls and disperse in every direction. The defile being cleared, the French column succeeded in rejoining its main body, with but trifling loss.

Why the Russians neglected to anticipate the fire of the French sections, and thus enabled this audacious attempt to succeed, we are not informed. As we cannot always depend upon meeting an enemy equally accommodating, the instance cited cannot be regarded as a precedent to be safely followed.

C. THE ENEMY IN REAR OF THE DEFILE.

1. Where the enemy is awaiting us in rear of the defile, with a battery ready to sweep the outlet, and troops, especially cavalry, ready to charge our columns in flank on its debouching, the task of forcing the defile will be so difficult and dangerous that it *should not be attempted but in a case of necessity*. Unless we are favored by some fortunate accident, or by some blunder of the enemy, the operation must be attended with very severe loss. To have any chance of success at all, the attack must be made with terrible and persistent energy.

2. In passing a defile to fight the enemy on the other side, our columns should be *closed*. Open columns would be too long in deploying.

3. If the defile be *short and straight*, we may command the outlet by our guns. In that case the difficulty will be much diminished.

4. But usually, defiles are too long or too crooked to admit of this. In such cases it is of urgent importance to *seize and occupy the heights on both flanks of the outlet with artillery*, before our columns begin to debouch; so that our guns may silence the battery that plays on the outlet. They will, at the same time, cover the debouching and deployment of our troops by sweeping the ground in front with a cross-fire, to keep off charges of cavalry and infantry. If we have no artillery, the task of covering our formation on debouching will devolve on our cavalry; which should, therefore, in such case, lead the march.

In the absence of both artillery and cavalry, we must rely, for this purpose, on a heavy line of skirmishers.

5. When there are *several issues in rear*, we must debouch by as many of them as possible, provided they be not so far apart as to lead to a dangerous scattering of our forces; for

(1). It will enable us to deploy more rapidly.

(2). It will diminish our loss from the enemy's artillery fire; which, concentrated on a single column, would cause great havoc.

(3). Unless the enemy be prepared to attack all the columns at once, it will enable some of them, at least, to debouch successfully, and, probably, to fall on the enemy's flank.

6. Not unfrequently, near the outlet of a defile, a spur or branch ridge, a ravine, or a wood, will be found, running for-

ward in a direction more or less perpendicular to the main ridge. As this will afford excellent cover for a movement to *threaten the enemy's position in flank or rear*, we should not lose a moment in occupying it with skirmishers; but as quietly as possible, so as not to notify the enemy of the movement. If the enemy have already occupied it, he should be driven from it immediately, if not in too great force. •

7. On debouching, we must strongly occupy the ground in our front; but should leave *a reserve at the entrance* of the defile till it is entirely ours.

8. Until we are in secure possession of the outlet, *all trains should be left behind* at its entrance, under a guard.

From neglecting this precaution, the Archduke John, at Hohenlinden, lost all the artillery trains and other trains of his army, which were following his main column on a single road through the forest, and which were cut off by a small French detachment and captured.

II. The Defence of a Defile.

1. Easily defensible by a small force as was the narrow Pass of Thermopylæ against any number of enemies, an obscure mountain path led the Persian invaders upon its rear; thus rendering the self-immolation of the three hundred Spartans a useless one to their country. Indeed, a defile that cannot be turned is seldom or never to be found. Only in those cases, therefore, where it is of decisive importance that the enemy should be *temporarily delayed*, should any very great sacrifice be risked in defence of a defile.

If a large part of the Persian army had been already in the heart of Greece, about to be attacked by a superior force of

Greeks, and everything therefore depended upon the rest of the Persians being delayed for a certain time at Thermopylæ, the desperate stand made there by Leonidas and his Spartans would have been as conformable to military principles as it was heroic. In Pope's campaign of 1862, one-half of the Confederate army was in danger of being overwhelmed by our forces, which were greatly superior in number. It was of vital importance to the Confederates that the other half under Longstreet, should not be delayed ; and it was of like importance to ourselves to detain it there as long as possible. If the Federal force posted at the Gap to bar the enemy's passage had adopted the Spartan course, and, instead of retiring on hearing of the enemy's approach to Hopewell Gap, had detached thither to seize the outlet, while sending back for re-inforcements, which might have reached there by morning, it would probably have sustained considerable loss, but would thereby, quite as probably have prevented Longstreet's junction with Jackson on the 29th of August ; in which event, the next day or two ought to have witnessed, instead of a Federal rout, a destruction of both wings of the Confederate army in detail.

2. Not only may most defiles be turned, but a defile *absolutely impregnable* to assault is nowhere to be found. Where one man can climb, so can another after him ; and a good and numerous infantry crowning the heights on the flanks must force the defenders either to retreat, or to fight on unequal terms.

3. We must not enter into a defile we have to defend, without a *previous reconnoissance*. Neither should our batteries or trains enter one till we hold its other extremity.

In the Second Samnite War, from not reconnoitring a defile before entering it, a Roman army was made to pass under the famous Caudine Forks ; the greatest disgrace that ever happened

to the Roman arms. On entering the defile, which widened in the centre into a plain of some extent, the Romans found that the Samnites held the other extremity too strongly to be forced from their position. After crossing the central plain, the Romans countermarched to pass out at the end by which they had entered ; but the Samnites were now holding that end also, as well as the hills on both sides of the pass. The Romans made a desperate attempt to force their way out ; but, after suffering immense loss, they were all obliged to surrender.

4. Defiles to be defended are reconnoitred in respect, First, to the *ground in rear* ; Secondly, to the *ground in front* ; and lastly, in respect to their *length, width* and *interior*.

5. The defence of a defile is made either

- (1). In rear of it.
- (2). In its interior ; or
- (3). In front of it.

The defence *in front* of a defile is so difficult that it is rarely used.

The defence *in the interior* is used only in defiles that are spacious, and too long to be readily turned ; for if, while attacking us in front, the enemy can seize the rear of the defile, he will place us in very great danger.

A defile is best defended *in rear* of it. This position is therefore always chosen when circumstances permit.

A. POSITION IN REAR OF THE DEFILE.

1. The ground is *most favorable for defence* in the rear of the defile.

(1). When it is a plain, giving scope to the three arms, with a sheltering cut, at canister distance, perpendicular or concave to the defile, for the cover of our guns.

(2). When it offers good cover for our flanks.

(3). When it is open in rear for retreat ; for example, not backed by a river or other obstacle.

And Finally, when there is but one issue upon the rear of the defile, and that one narrow or obstructed.

In the reverse of all these conditions, the ground in rear is unfavorable ; and it may be so to such a degree that a position even in the interior of the defile may promise a better defence.

2. The *measures* to be taken to defend a defile from a position in rear of it are as follows :

(1). Post a small mounted detachment at the entrance of the defile, to observe the enemy, and report his approach. Some light cavalry should also be thrown into the defile, to bring early intelligence of the enemy's actual entry into it, of his force, and of his order of march.

(2). Except these, we place no troops in the defile itself ; but we should not neglect to occupy strongly with skirmishers the key points on the flanks ; for this will delay the enemy, and possibly repulse him altogether. If there is any prospect of our being able to hold these points, the troops there should be strongly re-inforced. If it be practicable, and there be time, some light guns may be sent along to support them ; or they may throw up defences at suitable points.

(3). Plant a battery opposite the outlet, at not over 300 or 400 paces distance ; in such a manner as to sweep the outlet with canister, and so far as possible, the entire defile with round shot.

(4). If there be several outlets, obstruct all of them but one ; so as to compel the enemy to debouch by that one.

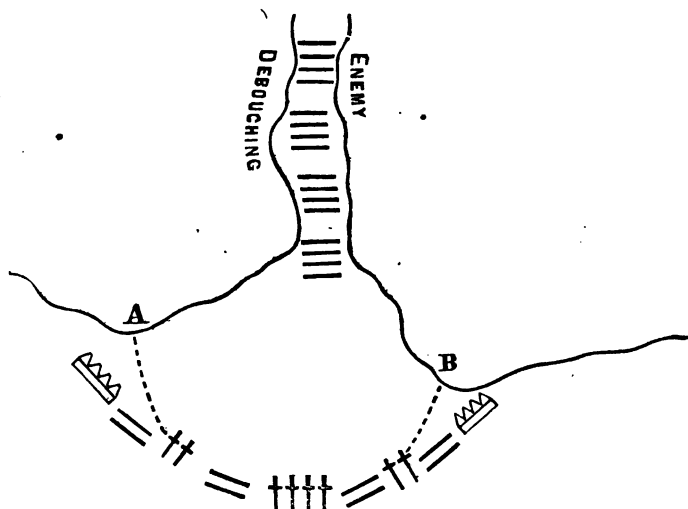
(5). When the head of the enemy's column makes its appearance, play on it with our artillery. If we have no artil-

lery, our infantry, drawn up in line opposite both flanks of the outlet, should pour in a concentrated cross-fire on the head of the enemy's column, as it begins to debouch; to be followed up by a charge with the bayonet.

(6). The charging troops, whether of cavalry or infantry, should be posted near the outlet; on one side or on both sides of it. If consisting of infantry, they should be formed in close columns of attack.

(7). The troops on the flanks should not be so posted as to present a flank to the enemy. Figure 1 illustrates the defensive position in rear of a defile.

FIGURE 1.



It is obvious that if the flanks were at A and B, they might be easily enfiladed by the enemy's guns, or perhaps charged in flank by his troops.

3. As a position in rear of a defile, and commanding the outlet, gives a great advantage over the enemy, we should by no means throw this advantage away *by advancing to attack him before he begins to debouch*. Nevertheless, to gain or to recover possession of the heights flanking the defile, which are its keys, we should be justified in engaging and fighting him obstinately ; but holding on firmly, at the same time, to our position in rear.

4. Where the nature of the ground is such as to endanger our flanks ; as for instance, where the main ridge is concave to us, or where a spur, a wood, or a ravine extends from it towards a flank of our position, we should either *occupy the dangerous locality with skirmishers*, or be ready to drive the enemy back on his first appearance there. In the defence of Thorofare Gap, already referred to, the Confederate skirmishers were silently pushed along a straight ravine that ran out perpendicularly from the main ridge to a point opposite the Federal left flank ; and it was the appearance of some of them that assisted in inducing the Federal commander to retire. An immediate reconnoissance in this direction would apparently have enabled him to sweep the ravine in its whole length by a couple of guns placed in enfilade.

B. POSITION IN THE INTERIOR.

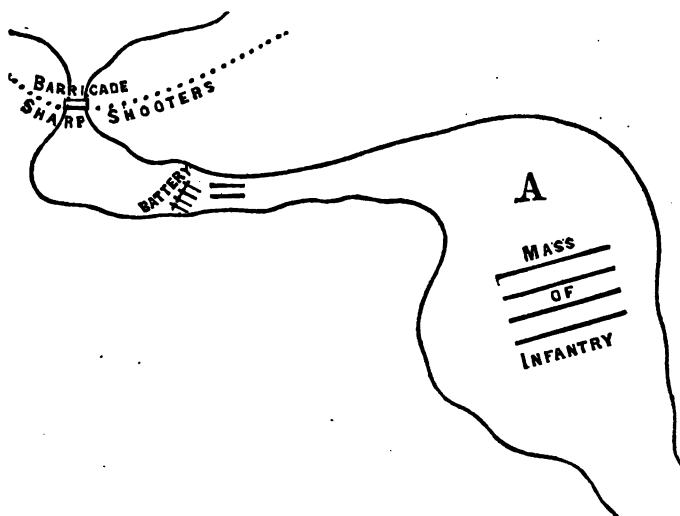
1. A defence in the defile itself is *rarely successful* against a resolute attack, and should therefore be avoided, when possible. A column crowded in a narrow pass, not being able to act freely, for want of elbow room, must receive an attack as an inert mass, and will be easily thrown into disorder, which must soon end in a rout.

For instance : In 1796, the Austrians, under Gen. Davidovich, were posted in the narrow defile of Calliano, between the River Adige, and steep mountains. The entrance was entrenched, and defended by several batteries. The French planted some guns to take the gorge of the defile obliquely. Their skirmishers scaled the heights and were advancing successfully, when nine French battalions in close column rushed into the defile, and charged the enemy's column which occupied it. The Austrian infantry, cavalry and artillery were instantly mingled together in confusion. The defile was forced, and its defenders routed with great slaughter.

2. A narrow defile, straight throughout, is so unfavorable to a defence in its interior, that it would be rashness to attempt it.

Not so with a *long and crooked* one, offering wide spaces where formations are practicable ; as in

FIGURE 2.



On inspecting the figure, it will be seen

(1). That a defile of this kind offers secure cover for the defending troops.

(2). That it affords them opportunities of taking the offensive by a sudden charge on the enemy's column.

(3). That in the event of a battery being taken by the enemy, it enables the defenders to recapture it by a charge in rear, or a reverse fire.

(4). That every opening into a wide space, as at A, is itself the outlet of a defile; giving the same opportunity to the defending troops to crush the head of the enemy's column as it debouches, by a charge, or by the fire of their guns, as they would have if posted in rear of the main defile.

3. The *important measures* for the defence of a defile in its interior, are

(1). To occupy the heights on the flanks with skirmishers, having strong supports and a reserve. If these troops are driven back, they rally upon such position in rear as will enable them to hold the enemy in check.

(2). To plant batteries and barricades at those points in the defile where they will be most serviceable in opposing the enemy's advance, and be protected at the same time by troops or guns in rear.

(3). To post detachments of troops in the wide spaces; the main body in the principal one.

(4). To guard well all the lateral issues of the defile. First, in order to prevent our retreat from being cut off; and secondly, to preserve the communications between the detachments and the main body.

C. POSITION IN FRONT OF THE DEFILE.

1. Troops attacked in front of a defile are always in a dangerous position ; for

First : Whenever the enemy can threaten to seize the rear of the defile, he will compel us to retire into it in order to secure our retreat.

Secondly : If we nevertheless determine to risk holding on to our position, and are forced back into the defile by an attack in front, our escape from disaster, owing to the confusion and disorder then apt to prevail, would be very difficult, and often impossible. And

Thirdly : The consciousness of this danger tends to intimidate troops placed in such a position, and thus to bring about the very catastrophe they fear.

For these reasons, a position in front of a defile is *the most unfavorable* of all.

2. There are, however, *two circumstances*, the existence of which would give us, in such a position, some chances of success, provided our troops be in a high state of discipline.

(1). Ground spacious in front, and favorable to an active defence ;

(2). Good positions for our artillery at the sides of the entrance, to cover a retreat.

If these conditions do not exist, it would be better to take up a position as far in advance of the defile as possible, without uncovering it.

3. The *leading measures* to be taken are

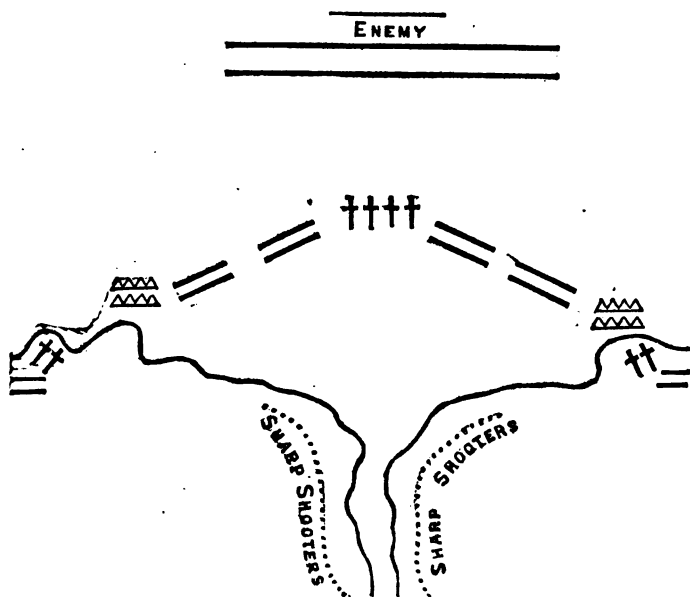
(1). To occupy the ground in such a manner as to profit by all the points favorable for defence.

(2). To rest the flanks, if possible, on points that cannot be turned. If we can rest them on the heights through which the defile opens, it will be difficult for the enemy to cut off our retreat through the defile.

(3). To form our line, when the ground admits of it, in a position convex towards the enemy. For this formation enables us, if compelled to retreat, to retire by both flanks at once without disorder, and, at the same time, cover both this movement and the entrance of the defile, to the very last moment like a *tête de pont*.

A defensive position in front of a defile is illustrated by

FIGURE 8.



4. If it become evident that we shall have *to retreat*:

(1). Send a strong detachment to secure the entrance of the pass, by occupying the heights on its flanks, and to strengthen the natural points of the interior defence by barricading or entrenching; so that, if the enemy should follow us into the defile, our rear guard may be able to hold him in check as often as possible.

(2). Send a few guns to be posted in commanding positions on the flanks of the entrance, so as to cover the retreat by a cross-fire in front. Send all the rest of the guns, reserving as few as possible for present use, (though never less than two,) to the rear of the defile, to be placed in battery to rake the outlet.

(3). Further to secure the outlet, send thither a part of our cavalry, keeping the rest to check the pursuit by frequent charges; which will be most effective if short, sudden, and violent.

(4). These dispositions being made, the main body will retire by a wing, or by both wings at once; the troops that retire last acting as a rear guard, and holding the entrance as long as may be necessary. •

5. A *disregard of some of these rules* caused the Austrian Army under Gen. Kray, a great disaster and disgrace in the campaign in Germany of 1800.

The Austrians had established vast magazines at Biberach, a small town situated in the centre of a marshy valley; the only passage through which was a narrow road over a bridge into the town, and thence over another bridge, and through the marsh again, to a height in rear called the Mittenberg, which the Austrian army, numbering 60,000 men, had occupied for the purpose of covering their magazines at Biberach. -

On the approach of the French, with the idea of gaining

time to remove or destroy their magazines, they had posted 9000 men in advance of the entrance of the first defile leading to Biberach. The French, on arriving, vigorously charged these troops, who, being jammed back into the defile, were driven in a confused mass down the valley to Biberach. They did not stop there ; but rushed on till they had rejoined their main body drawn up in line of battle on the Mittenberg in rear of the town.

General St. Cyr, the French commander, rightly judging that this sudden rush of panic stricken troops would demoralize the whole Austrian army, promptly availed himself of the opportunity, and led his two divisions at a rapid pace over the narrow road across the marsh in rear of Biberach, ascended the height, and boldly attacked the Austrian line in front. Not only was he allowed to do this with impunity ; but, after firing a few shots, the whole Austrian army fled in confusion before him ; 20,000 Frenchmen thus routing 60,000 Austrians, after capturing their magazines before their eyes.

It is obvious that the chief cause of this disaster was the error committed by the Austrians in posting the 9000 men *at the entrance* of the defile ; a position from which they were nearly sure of being driven down the defile in confusion, carrying a panic into their main body, by which everything would be lost. If instead of this, the Austrians had made their defence by a strong force posted at Biberach itself, that is, in rear of the first defile, which their cannon would sweep in its whole length, it would have been a desperate undertaking on the part of the French to dislodge them.

But good fortune has sometimes saved Generals from the consequences of their disregard of established principles. Waterloo is an instance of this. Wellington's position was in

front of the dense forest of Soignes, with but a single road through it practicable for the retreat of an army. In other words, Wellington's army was drawn up directly in front of a long and narrow defile. His defeat in such a position must have led to the destruction or surrender of his whole force. It was only the accidental circumstance of the arrival on the field of Bulow's Prussians instead of Grouchy's French that saved the day, and rescued him from the consequences of taking up so dangerous a position.

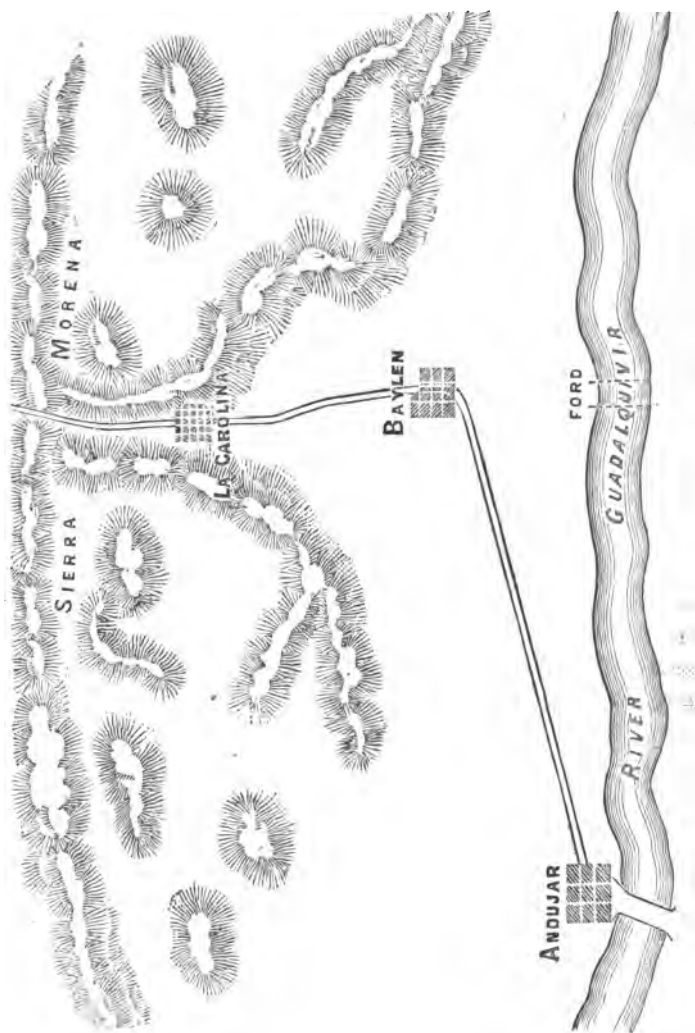
6. Nevertheless, there may be *exceptional cases*, where the ground in front is so favorable to a good defence, compared with that in rear, or in the defile itself, as to render a position there preferable to any other.

7. When the entrance to an important defile is to be guarded, if a *suitable position* for this purpose be not chosen, it may lead to disastrous consequences.

In 1808, in the Peninsular War, a French army of 20,000 men under General Dupont, was posted behind the Guadalquivir, waiting for re-inforcements from Madrid, to enable it to march to the conquest of Andalusia. Its only line of communication with Madrid was through a long and narrow defile of the Sierra Morena; at a little distance in front of which was the town of Baylen. The Spanish forces were all on the South side of the Guadalquivir. The only bridge in the neighborhood by which they could cross was at Andujar, some eighteen miles to the (French) right of Baylen. But directly in front of Baylen there was a ford. (Figure 4.)

Baylen was manifestly a better position for the French corps than Andujar; for, posted there, besides guarding the ford, it would bar the entrance to the defile, which the Spaniards could

FIGURE 4.



not have forced without fighting a battle ; while at Andujar it would be too far off for this purpose.

But Dupont, in his anxiety to defend the bridge at Andujar, lost sight of this. Leaving one division only at Baylen, and a small detachment to watch the ford in front of it, he took post with the mass of his force at Andujar ; thus risking the principal object in order to secure a secondary one. And without necessity ; since, with the mass of his force at Baylen, a single brigade, under cover of the town and of a strong *tête de pont*, could have easily held the bridge at Andujar till the arrival of re-inforcements.

After these dispositions were made, a Spanish force of 15,000 men, under Castaños, showed itself opposite Andujar ; while another corps of 18,000, under Reding, suddenly crossing at the ford, drove back the small detachment posted there, as also the division at Baylen, to La Carolina, in the very throat of the narrow defile. Dupont, on hearing of the enemy's appearance opposite Baylen, had sent off a division to re-inforce that point. He soon found it necessary to repair thither himself with his whole force. But it was too late. The enemy already occupied Baylen, which was the key of the defile ; and though the French fought bravely, the exhaustion from a long forced march in a hot summer's day, without a drop of water, finally compelled them to yield ; and Dupont, finding himself, by the loss of the defile, cut off from his supplies, and between two fires, (for Castaños was now at Andujar), was forced to surrender with his whole army, including even the division that had escaped as far as La Carolina.

III. Case of Several Defiles.

1. To *force one of several defiles*, all of which are occupied by the enemy :

Fix upon that one of them which seems to offer the most chances of success ; make a feint of forcing another one at a distance from it ; and then rapidly push our masses through the one selected.

It is plain that the success of such a manœuvre as this will depend chiefly upon celerity of movement.

2. When a corps has *several defiles to guard* ;

It must not split up its force by occupying all of them. It should rather choose a strong position in advance, at some central point commending the approaches to them all ; so as to be ready to fight and beat the enemy when he arrives. Such a course will offer a better prospect of success than the actual occupation of the defiles themselves ; which, besides scattering our force, will probably fail to effect the object ; since nothing will be easier to a vigorous enemy than to suddenly pour his masses through one of several defiles, while masking the others by detachments.

3. But *where no such position in advance can be found*, or where the enemy's force is decidedly superior to ours, the next best course is to occupy all the defiles threatened ; but observing what follows :

Three defiles will be supposed.

(1). In order to keep our force as much concentrated as possible, our principal mass should be posted in one of them ; and in the others, detachments only, for observation.

(2). If we obstruct or entrench the entrances to these other

defiles, this may delay the enemy who attempts to force one of them long enough to enable our principal mass to take up a position in rear of the defile, to crush him as he debouches.

(3). It is at or near the principal defile that our principal mass should be posted; because it is from that position that it could march in the shortest possible time to the defence of either of the two others.

(4). The troops guarding the defiles should not show themselves in front of them; for the enemy may not know of their presence there, and our defence would in that case gain the advantage of a surprise.

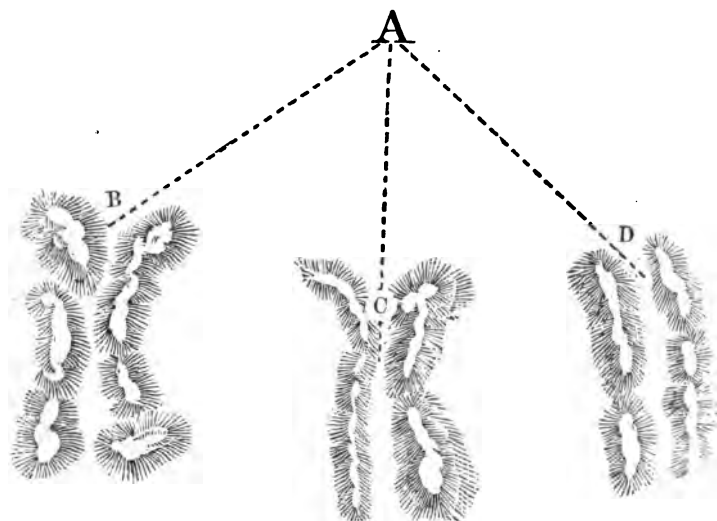
But sometimes the troops may be displayed in such a manner as to serve the purpose of a stratagem. For instance: if one of the defiles be much stronger than the others, from defences or from natural or artificial obstructions, we may draw the enemy to attempt the passage of that very one by masking our troops there, while showing as large a force as possible at the others.

4. The enemy may appear at a point which *threatens all the defiles equally*: as at A, in Figure 5,—supposed to be at one day's march, at least, or strategic distance from C, where our principal mass is posted. If, then, he marches on one of the outer ones, as D, we may throw our principal mass, re-inforced by the detachment at B, on his flank, and probably rout him.

If we are not strong enough to venture this, or if the ground or other circumstances forbid it, we must have the mass at C and the detachment at B in readiness to concentrate as rapidly as possible in rear of the defile D, to fall upon the enemy as he debouches; but not to march till the last moment; for the enemy's advance on D may be only a feint.

5. If, on the other hand, *the enemy marches on C, the cen-*

FIGURE 5.



tral defile, we may concentrate our three masses at some point in advance, and attack and beat him. In the attack, our central and principal mass will naturally engage him in front, while our outer masses come on his flanks ; and if our principal mass be strong enough, or act with vigor enough to keep his front employed the flank attacks ought to decide the battle in our favor.

6. But if the point A, where the enemy appears in greatest force, instead of being at strategic distance from the central defile, is but a few miles in front of it, or *at tactical distance* merely, there may be no time to take any other measure than to mass, at once, everything in rear of the defile threatened, or in such other position as will best enable us to defend it.

7. We have supposed the defiles to be guarded to be near

each other ; that is, not extended beyond the sphere of the tactical operations of a single corps. But when the distances between them are so great as to take them into the *sphere of strategic combinations*, as in the case of gaps through a mountain chain, like the Blue Ridge in Virginia, running through a considerable extent of country, the defiles cannot be guarded. As it is impossible to keep an army stationed at each one of these numerous defiles, the enemy, by suddenly concentrating in force, will pass through any one of them he chooses. The only way, therefore, of guarding a long and extensive valley, like that of the Shenandoah, for instance, would be by posting a large reserve force at one or two points in the valley itself, so chosen as to enable it, on the enemy's advancing, to concentrate rapidly on his flank, or to threaten his base, or his line of retreat, according to circumstances.

But even this means can by no means be relied upon ; as was shown in Napoleon's opening campaign of 1805, in which he succeeded in turning the Austrian position at Ulm in the Valley of the Danube, by a long flank march past the mountain defiles opening into the valley from the north, by simply diverting the attention of the Austrian Commander by an ostentatious display of force in the Black Forest in his front.

THE FORCING AND DEFENCE OF RIVERS, AND THE PASSAGE OF RIVERS IN RETREAT.

An army or a single corps may have to cross a river, the opposite bank of which is held by the enemy ;

To defend a river, or to oppose a crossing by the enemy from the opposite bank ;

Or, It may have to cross a river in retreat, the enemy pursuing.

So that the three topics to be considered are

I. FORCING A PASSAGE.

II. THE DEFENCE OF A RIVER, AND THE OPPOSING OF A PASSAGE BY THE ENEMY.

III. A PASSAGE IN RETREAT.

To which will be added

IV. THE FORCING AND DEFENCE OF BRIDGES.

V. THE FORCING AND DEFENCE OF FORDS AND DIKES.

I. Forcing a Passage.

A. GENERALLY.

1. Crossing a river in the face of a hostile army drawn up on the opposite bank to oppose us is one of the most difficult and hazardous operations in war. It is therefore important to *prevent the presence of the enemy in force near the point of crossing*. This is done by a diversion, or by deceiving him as to the intended point of passage, by means of demonstrations or of a show of force at another.

Of this, the British passage of the Brandywine in 1777, is an instance.

Our main body was posted on the Northern bank, at Chad's Ford. The British, who occupied the Southern bank, opposite to us, determined to cross some twelve miles higher up the river, above its forks; and to enable them to do this unopposed, they left a portion of their force in our front, which made a feigned attack with artillery and skirmishers, while their main

body was crossing above ; thus turning the right flank of our army. What greatly facilitated the operation was our want of sufficient light cavalry to furnish vedettes to watch the river as high up as the point where General Howe crossed.

In 1796, Bonaparte, having to cross to the Northern side of the Po, then in possession of General Beaulieu, with a large Austrian army, had, by various means, caused it to be understood that he intended to cross at Valenza. At Valenza, accordingly, the Austrian army had made every preparation to oppose him. But Bonaparte, sending a detachment in that direction, as if to prepare for the crossing, suddenly made a forced march of forty-eight miles in thirty-six hours to Placenza, where he crossed without difficulty ; two squadrons of cavalry only being stationed there, which were soon driven away.

In 1812, Marmont crossed 42,000 men over the Douro in spite of Wellington's army, which was in superior force, being drawn up on the opposite side to prevent him. Sending his right wing by his right towards Toro, he at the same time caused bridges or piles to be prepared at some distance below, to his left, at Tordesillas. At this point, his whole centre and left crossed over in one night ; and the next day, profiting by the surprise and confusion of the English on suddenly finding the French on their flank, he brought back his right, which also crossed over without opposition.

Again, in 1796, the Austrians had taken post behind the Mincio ; and the more surely to prevent Bonaparte from crossing, had extended themselves along the river from the Lago di Garda to Mantua. Bonaparte saw that their line was too extended, and determined to pierce its centre by crossing at Borghetto. But this would be a desperate undertaking if the

Austrians should know of it beforehand, and thus be enabled to concentrate all their forces there. He, therefore, having intended his right to lead in the crossing, left it at the distance of one and a half day's march from the bridge. At the same time advancing his left in the direction of Peschiera, from which the remainder of his divisions were posted *en échelon* back to his right, he sent a demi-brigade towards that place, and made 1500 French cavalry skirmish up to its very walls. This completely diverted the Austrian General's attention from Borghetto; thus causing him, in the fear that the French were about to cut his communications with the Tyrol by the head of the Lago di Garda, to send troops in that direction to prevent it. Meanwhile, Bonaparte's right division, the most remote from the river, began its march in the night, followed by the others in succession. The result was that the French crossed the bridge with very slight opposition; the small Austrian force there being soon overwhelmed by numbers.

In 1862, the Confederate General Lee, by a mere exhibition of force in front of his adversary, General Pope, threatening the rail road to Washington which Pope was then covering, was enabled to cross the Rappahannock at only a short distance above him, with a powerful army, and by a flank march, the boldest of manœuvres, to turn Pope's position by Thorofare Gap, and place Washington in imminent danger.

In September, 1863, the Confederate General Bragg was guarding the Tennessee River with a large force at Chattanooga and its neighborhood. The Federal General Rosecranz, placing four brigades opposite and above Chattanooga, and ostentatiously collecting bridge materials at that point, and making an active show of preparing to cross there, suddenly crossed with his main force at some distance below, at Caper-

ton's Ferry and Bridgeport, where his real preparations had meanwhile been secretly made ; thus threatening Bragg's communications and compelling him to evacuate Chattanooga.

2. From the above example it appears that, by *sending a detachment to threaten the enemy's rear*, we may not only succeed in crossing a river unopposed, but at the same time compel the enemy to fall back from it. Of this, it will be sufficient to cite one other instance

In July, 1864, the Confederate army under Gen. Johnston, which had been driven across the Chattahoochee by Gen. Sherman, was drawn up behind that river to defend its passage. Instead of attempting to force a passage, which would have been, whether successful or not, a very bloody operation, Sherman accomplished his object by simply sending a column up the river at some distance to his left, to cross there. Gen. Johnston, finding his position turned, and Atlanta in his rear threatened, was thereby compelled to fall back to that place, leaving the river in Sherman's possession.

3. But where the enemy has heavy pickets at all the crossings, it is not advisable, though with the view of confusing him, to *make a feint at each one of them* ; for this would keep our own force too much dispersed to be able to effect a prompt crossing at any point whatever. Instead of this, we should content ourselves with a serious feint at or near one flank, to draw the enemy thither, while we are secretly massing everything to cross at or near the opposite flank. Feints to cross a wide and deep river are usually very safe ; since the river itself screens and protects our movements.

B. THE POINT OF CROSSING.

As to the requisites of a good point of passage :

1. It should be at a bend of the river, where *the re-entering angle is on our side* ; for, by this means, we obtain positions for our batteries which will give them a cross fire on the ground in front of the crossing on the other side.

2. In order that our batteries may sweep all the ground on the opposite side, the ground on our side should *command* that on the other.

3. But the command over the other side should not be *too great* ; for our shot will then plough too much, or be buried in the ground ; and the descent to the water would usually be too steep and difficult.

4. The landing ground on the other side should offer *cover* to the detachment sent over to effect a lodgment, against the enemy's cavalry and artillery.

5. But the ground on the other side should afford *space for our troops to form* immediately on their landing. It is very dangerous when, after crossing, we have to fight our way to get room for an order of battle ; or when, as at Ball's Bluff, in 1861, our troops are obliged, on landing, to climb a steep cliff before they can form.

The larger the hostile force waiting to receive us, the more ample must be the ground at the landing, to enable us to deploy our whole force without delay.

6. The *narrower* the river at the point of passage, the more speedily will the bridge be constructed.

On this point, Napoleon remarked that a position commanding the opposite bank is strong in proportion as it admits of

planting guns upon it ; that the advantage is less if the river be more than six hundred yards wide, as grape or canister will not reach that distance ; and thus our troops arriving on the other side may be swept off by the enemy's grape or canister from guns posted four hundred yards from the bank. In such case, he remarked, the passage is impracticable, unless by surprise, or protected by an intervening island.

But these observations, correct as they were when they were made, are now no longer applicable ; since, by the introduction into general use of shrapnel or spherical case shot, the effective range of canister has been virtually extended to fifteen hundred yards.

7. Where the river is wide, if there be *an island* near the point of passage, of which we can obtain possession, it will greatly facilitate the crossing ; especially if it be wooded, so that it may screen our operations to complete the crossing.

8. A *large town on our side* of the river, and in our possession, is a favorable point for crossing ; as it affords great resources for the construction of bridges. Besides this advantage, any town or village on our own side is a more favorable place to cross from than the open country ; inasmuch as it affords cover for our troops, artillery, and carriages, and masks our preparations for crossing.

9. But crossing a river to a *town or village on the opposite side*, occupied by the enemy, would obviously increase the danger of the operation, giving him cover in opposing us. If, however, it be but feebly occupied, it would not be so objectionable, but might be, indeed, advantageous ; because it ought then to be easily carried ; and when once carried, with a few readily improvised defences, it becomes a good *tête de pont*, and thus gives us a firm foothold on the further side.

The advantage in crossing over to a town to fight a battle in front of it, when it is completely commanded by our artillery on the hither side, was exemplified by Burnside's unmolested withdrawal of his army over the Rappahannock after his unsuccessful battle of Fredericksburg, in December, 1862.

Wellington's famous crossing of the Douro was directly to Oporto itself, then occupied by the French army under Soult. What made this very daring operation successful was the large and strong, though unfinished, building called the Seminary, close by the river side, into which, it being unoccupied by the enemy, Wellington threw his troops as fast as they arrived; thus obtaining a secure lodgment in the place before the French army was ready to oppose him.

10. To gain time, as well as to prevent confusion, the troops should, if possible, cross *at more than one point*.

But the points of crossing should be so near together that the different detachments will not find themselves isolated from each other on landing. Napoleon severely rebuked General Brune for crossing the Mincio in 1800, at two points six miles apart. The Austrians at once concentrated their masses on one of the isolated divisions, and would have destroyed it, but for strong reinforcements that spontaneously rushed over from the other side, without orders. As it was, the French barely maintained their position, suffering severe loss.

C. THE CROSSING.

1. *Night* or during a *thick fog*, is generally the most favorable time for crossing; for

(1). The darkness or the fog may conceal the crossing from the enemy; and

(2). Even when it does not, it may prevent him from attacking with effect.

2. In moving to the point of passage, *silence and perfect order* are indispensable, and all persons who might notify the enemy of our design must be arrested and kept under guard till the army has completed its crossing.

3. On approaching the river, it is best to *unload the pontoons*, and carry them noiselessly by hand; and that the troops should camp without fires. Both these precautions were used by our First and Sixth Corps in the night of the 26th of April, 1863, and contributed not a little to the success of their crossing of the Rappahannock. By daylight our troops were over, driving the enemy from their rifle-pits.

4. On arriving at the river, if there be *an island*, especially if it be wooded, thereby offering us cover, we should occupy it at once with infantry and some guns.

5. Whether the passage is to be made in ordinary boats or by a military bridge, to save time, *fords* should be immediately sought for, for the passage of the cavalry and horse artillery.

7. If the enemy have the advantage of a *higher bank* on the other side, we may counteract it, to some extent, by a battery of howitzers; as shells, by their bursting, may act effectively on ground unseen by us.

8. Where secrecy and dispatch are required, it is very important that the bridges should be thrown over by *regular engineer troops*, under professional engineer officers. A striking instance of what may be accomplished by practical skill and discipline scientifically directed, is afforded by the crossing of the Tennessee River by the entire left wing of our army under Sherman, in November, 1863, to fight the battle of Chattanooga.

The Fifteenth Corps, with a division of the Fourteenth in support, was kept massed behind the hills near the intended point of passage; near which were hidden many wagon loads of lumber. One hundred and ten pontoon boats were placed out of sight in a creek on the North side of the river, and twenty more were hidden in a ravine at some distance further down. At 2 A. M., a fleet of boats containing a whole brigade pushed noiselessly out from the creek, and quietly dropped down the river. Such was the silence and secrecy that our own pickets along the river knew not when the boats passed. Before dawn, the brigade had debarked, formed, and carried the intrenched posts of the enemy's pickets on the South side. By daylight a pontoon bridge was half way across the river, and work begun on its Southern end; while our advance was being rapidly reinforced by some forty boats, each bringing fifteen or twenty men at a time. The crossing then received ample protection from 56 guns, heretofore concealed, which now appeared on the hill sides, and along the Northern bank of the river. The entire movement was successfully completed, and resulted in one of the most important Federal victories of the war.

9. The first thing to be done is to *establish our batteries* on the bank, in such a manner as to sweep the opposite side with a cross fire. To these batteries, rifle pits along the bank will usually be found an important auxiliary, in order to clear the way for our first detachments.

When the crossing is to a town or village held by the enemy on the opposite side, it will be important to find positions from which our guns may enfilade the streets.

10. The next thing is, to *effect a lodgment* on the enemy's side. For this purpose, throw over rapidly in boats a detachment of sharp shooters, or other light troops, to occupy and guard the

landing place ; and, when a bridge is to be built, to protect the workmen from attack. If these troops be within view of the enemy, reinforce them quickly.

11. If the enemy have already, to prevent our crossing or constructing a bridge, occupied the opposite bank with rifle pits, the most effective means to dislodge him will be to send over, at once, *detachments of sharp shooters in boats* ; our batteries supporting the movement by a cross fire on the ground near the points of landing. A general artillery fire will not usually suffice for this purpose ; especially when the command on our side is so great that our guns cannot get depression enough to sweep the opposite bank.

On the 11th of December, 1862, our army under General Burnside crossed the Rappahannock to fight the battle of Fredericksburg. At daylight, our pontoon bridges being but half completed, our engineer parties were driven away by a deadly fire from the enemy's sharp shooters posted behind stone walls, and in cellars and rifle pits near the river. Some half a dozen attempts were made to complete the bridges, under cover of a fire from one hundred and forty-three guns. But our workmen, picked off with accuracy by these sharp shooters, were every time repulsed with great slaughter. Our own sharp shooters, deployed along the bank, could not reach the enemy in their hiding places. A tremendous cannonade of one hour had no other effect than to set fire to some of the buildings in Fredericksburg. Then went over in boats the Seventh Michigan, which, after crossing under fire, charged up the ascent, carried the rifle pits and buildings, and took thirty-five prisoners ; all this with the loss of only five killed and sixteen wounded. Supported by the 19th and 20th Massachusetts, which had pushed on after them, these troops held their ground

until that entire wing of the army was over. The bridges were completed within half an hour after the enemy were dislodged from their rifle pits.

12. As soon as we have obtained a lodgment on the other side, an *advanced guard* should be thrown over, consisting of the three arms. On reaching the other side, it should rest its flanks on the river, take up a good defensive position, and be careful to act on the defensive only.

13. The *order of passage* of the main body depends partly on the nature of the ground on the other side, and partly on the kind of resistance that is to be overcome. It may be sometimes best to send over the heavy guns first, in order to take up a position to check the enemy's advance, and to obtain for us ample ground to deploy and manœuvre on. The infantry should be followed by the light guns ; and then by the cavalry and horse artillery. Sometimes these last it will obviously be better to send over first.

If we have several points to cross from, we will be able to push over troops of all the three arms at once, and thus be prepared for every contingency.

14. While the enemy is engaged in resisting the crossing of our main body in his front, it may have a decisive effect to send some cavalry to cross at another point, so as to *take him suddenly in flank*.

At Lodi, when the head of the French column had at last crossed the bridge, the Austrians were prevented from attacking it by being suddenly attacked themselves in flank by a few squadrons of French cavalry that Bonaparte had sent to cross higher up, for this very purpose.

But there is this danger attending such an operation ; that it could not always be so accurately timed, as to accomplish the

object. If the flanking detachment should not arrive till the passage has been already forced, and the enemy driven away, it will have served no purpose whatever ; and if, on the other hand, it arrive while the enemy still hold the river bank and the head of the bridge, or other landing, it risks being captured or destroyed.

15. Where there is no bridge, the *means of transportation should be amply sufficient*, not only to enable our troops to be pushed over rapidly, but also for their retreat in case of disaster. Unless there be transport enough for this purpose, it would be rash to attempt the operation against an enemy in force ; for our troops, arriving in dribblets, would be in danger of destruction ; and if driven to retreat, the greater part of them would probably be captured or destroyed.

Our disaster at Ball's Bluff in 1861, was much less serious than it might have been, had the enemy shown any vigor ; considering that the only transport we had for 2500 men was three small scows and a skiff. Having been driven back to the river side by the enemy, who numbered some 4000 men, and without means of retreat, it is a wonder that any of our men escaped at all.

16. The same disaster illustrated the importance of the rule that the means of crossing should be always *guarded by a sufficient detachment* stationed over it ; the trifling transportation we had on that occasion being carried off and swamped or lost by the first panic-stricken fugitives from the fight ; leaving the great mass without any means of escape.

17. Over confident in his good fortune, Napoleon owed his first serious reverse to his disregard of the established principle that, in crossing a river in face of the enemy, the means of transportation should be *proportionate to the force to be trans-*

ported, and should always be sufficient to make a retreat safe, in case a retreat should become necessary.

In 1809, to prepare for the crossing of his army over the Danube to attack the Austrian army under the Archduke Charles, Napoleon had laid several bridges from the South bank of the river to the island of Lobau ; but from this island to the Northern bank, that is, over the narrow arm of the river, by which his whole army was to debouch on the field of battle, he had laid but a single bridge. The villages of Aspern and Essling, which were the keys of the battle ground, were already held by the Austrians, whose flanks were supported on them respectively. In the face of 90,000 Austrians concentrated on the field, Napoleon had succeeded, through his wonderful skill and the vigor and dash of his troops, in bringing over and deploying 60,000 men ; who, after very severe fighting for two days, and several alternations of fortune, had finally wrested the two villages from the Austrians, and had even forced them to commence a retreat. Nothing was now wanting to complete the victory but the arrival of the remaining corps of the French army, unexpectedly delayed by a sudden rise of the river ; which had so much injured the bridges on the South side of the island, as to compel these corps to wait till they could be repaired.

It was at this moment, in the full tide of success, that Napoleon was informed that, by another and still greater rise in the river, all these bridges had been swept away ; leaving the rest of his army, with all his ammunition wagons, on the other side, without any means of crossing. Thus cut off from the reserves on which he had relied to complete the victory, and especially as the ammunition of his troops was now well nigh exhausted, and they themselves worn out with hard fighting and fatigue,

he saw that he could save them from certain destruction only by at once arresting their advance, and withdrawing them from the field of battle, across the single bridge, to the island of Lobau. He gave orders accordingly. But, in spite of his own admirable dispositions, the cool heroism of his generals, and the steady valor of his troops, obstinately contesting every inch of ground against superior numbers, before whom they were now ordered to fall back, the scene at the bridge was one of the most frightful confusion; presenting a dense mass of soldiers, struggling to make their way over, and to escape from the enemy's shot which were ploughing through their ranks, and guns and artillery wagons tumbling into the river; into which plunged headlong great numbers of helpless and terrified wounded, never to rise again.

The French loss was 15,000 men. But if such an operation had been attempted by any other than Napoleon, with his splendid army, the loss would, no doubt, have been vastly greater.

Thus did a fine army narrowly escape entire destruction from the want of a sufficient number of bridges behind it to secure a safe and orderly retreat.

18. The *most masterly passage of a river*, in the face of a hostile army drawn up to oppose it, to be found in history, was

D. NAPOLEON'S CROSSING OF THE DANUBE IN 1809.

This was a few weeks after his compulsory retreat at Essling, just related. His skilful dispositions made this dangerous operation not only safe, but brilliantly successful; showing what wonders may be effected in war by the faithful application of sound military principles.

A brief account of this celebrated operation, beginning as far back as the occupation of the island of Lobau, previous to the battle of Essling, cannot but be instructive. It will be given in the following order :

- (1). The choice of the point of crossing.
- (2). The nature of the ground on the opposite bank, and in what manner occupied by the enemy.
- (3). The arrangements for crossing.
- (4). The crossing, and the debouching of the Grand Army on the field of Wagram.

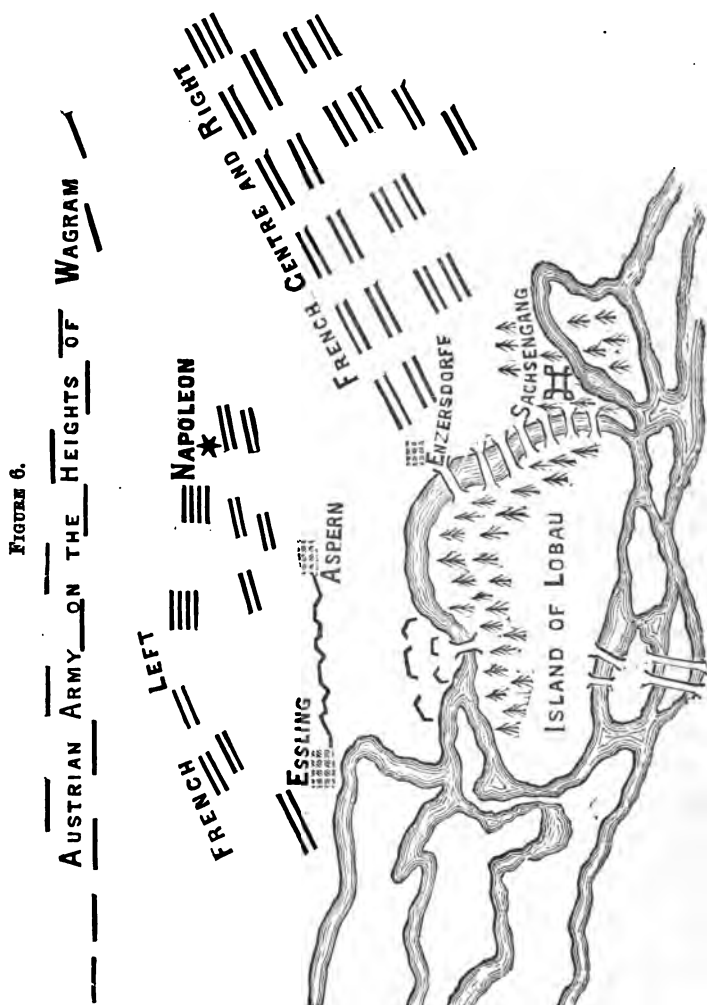
(1). CHOICE OF THE POINT OF CROSSING.

1. As an army of 150,000 men, including 26,000 cavalry, 550 guns, and 40,000 horses, was to be crossed over a deep and wide river in the face of an Austrian army of nearly equal strength, drawn up on the opposite side for the express purpose of opposing its passage, it was of the first importance to select the *most favorable point* for crossing that could be found.

2. The French army was posted on the Southern bank of the Danube, near Vienna. There were several islands in the river, some of which were above, others below that city, and at various distances from it. It was obvious that by the *occupation of one of these islands*, as an intermediate point for the crossing, the operation would be greatly facilitated.

3. It was plain that the crossing must be in the immediate neighborhood of Vienna ; for, on the withdrawal of the French army to any distance, the Austrian army would at once re-occupy their capital. It was therefore necessary to fix upon *one of the islands near to the city*.

4. The *chief requisites* of the island sought for were



First ; That it should be sufficiently extensive to accommodate a large army with its *matériel*.

Secondly ; That it should afford shelter for such an army, both from the enemy's view, and against his missiles ; and

Thirdly ; That it should be much nearer to the opposite bank than to the hither one ; in order that the arm of the river to be crossed in passing from the island to the enemy's side, the most dangerous part of the operation, should be as narrow as possible ; for this would shorten, in a corresponding degree, the length of the bridges.

After careful reconnoissances, Napoleon made choice of the island of Lobau. (See Figure 6.)

5. *The advantages* this island presented were as follows :

First ; It was only six miles below Vienna.

Secondly ; It was of considerable extent ; being four and a half miles long by three miles wide. It could thus contain a large force ; which, encamped in the centre of the island, would be beyond the reach of a cannonade.

Thirdly ; On the side toward the enemy, it was covered with woods ; which furnished a complete screen for the army, and its operations.

Fourthly ; The large arm of the river, which was about 360 fathoms wide, was on the Southern or French side of the island ; while the narrow arm, only 60 fathoms wide, was on the side towards the enemy.

Moreover, the narrow arm, at the right flank of the island, made a sudden turn to the right to join the main arm ; the bend thus made being some 4000 yards long.

(2). THE GROUND AND THE ENEMY ON THE OPPOSITE SIDE.

1. The ground opposite the right flank of the island was a smooth and *extensive plain*, highly favorable to the deployment of a large army.

2. At the (French) left of this open plain, at the point where the narrow arm of the river commences its abrupt bend, was the little village of Enzersdorff, which was covered by defensive works and artillery. On the right of the plain, lower down, was a *thick wood*, extending to the confluence of the two arms.

3. Aspern and Essling opposite, respectively, the left and the centre of the island, were entrenched; as was also the ground between them. But *from Enzersdorff down to the confluence of the two arms*, the only works were a small redoubt of six guns, a house called the "Maison Blanche," and a building in the wood called "Sachsengang Castle," garrisoned by a single battalion of infantry.

4. The Archduke Charles, with an army of 140,000 men, and 400 guns, was encamped *on the heights of Wagram*, opposite the island. An Advanced Guard occupied Enzersdorff, the plain, the redoubt, and the wood. The works from Essling to Aspern were occupied by Klenau's Corps.

(3). THE ARRANGEMENTS FOR CROSSING.

After the bloody check Napoleon received in the battle of Essling, caused by the sudden destruction of the bridges crossing to the island from the South side of the river, as also by his own rashness in providing for a large army but a single bridge for retreat, he determined to ensure the success of his next attempt by arrangements so complete as to guard against every contingency. His preparations were effectually screened from the enemy by the wood already mentioned, which extended over the Northern side of the island. The most important of these preparations were as follows:

1. To secure the bridges connecting the island with the South bank, which were now too solidly constructed to be swept away by a sudden rise in the river, against fire boats or heavy objects which might be sent down upon them by the enemy, a vast *wear*, or rows of large piles, deeply imbedded in the bottom of the river, was planted above the bridges, obliquely to the current, to intercept everything that was passing. Besides this, seamen of the Imperial Guard, moving about in wherries, kept up a constant lookout, hooking up every object that floated down, and drawing it ashore.

2. Numerous field works were ostentatiously erected *near the former crossing* on the left side of the island, as a feint, and also to protect a retreat at as many points as possible.

3. To the right of these, and chiefly *on the right side* of the island, batteries of 24 pounders, mortars, and howitzers, numbering in all 109 pieces, were erected, for the purpose of throwing shot and shell to a great distance, so as to cover every spot where the enemy might come. Some of these were destined to bombard Aspern and Essling and the line of entrenchment between them; some, to reduce Enzersdorff to ashes in two hours; others, to sweep the great plain opposite the right of the island with such a mass of grape that no enemy could exist there.

4. To protect the making of the bridges over the narrow arm, *flatboats* were constructed, the invention of Napoleon himself for the occasion, having moveable gunwales, musketry proof, to be let down on reaching the river bank, and used as platforms for landing. Of these flatboats each Corps had five; and as they could each carry 300 men, each Corps could thus land 1500 men at once on the enemy's side; a number amply sufficient to protect the construction of the bridges; for, as the

enemy would not know beforehand where the crossing was to take place, his advanced posts would not be strong enough to resist these advance detachments.

5. The materials were got ready for *four bridges*; one of them to consist of large rafts, for the passage of artillery and cavalry. Thus the three corps of Massena, Davoust, and Oudinot would be able to debouch simultaneously.

6. There were *ponds*, or *basins*, in the interior of the island, connected with the small arm of the river by a canal cut for the purpose; so that the boats, pontoons, and rafts were all prepared without giving any indication at what point the passage was to be made.

7. In these basins were kept *spare timber, rafts, and pontoons* sufficient for the prompt construction of four or five bridges more, in case an additional number were required to hasten the debouching of the army, or to facilitate its retreat.

8. In order to compel the enemy more completely to *develop his position and exhibit his force*, and also as a feint, two days before the crossing, Napoleon caused a division of Massena's corps to pass over the old bridge at the left of the island, and secure a lodgment on the opposite side; which it could safely do, as the ground at the further extremity of that bridge was commanded by several French batteries. This movement had the desired effect. The Archduke Charles, then in position on the heights of Wagram, hearing a heavy firing from the French redoubts in that direction, and supposing the crossing to have commenced there, deployed his whole force, and descended into the plain towards Aspern and Essling. He waited there a day or two; when, seeing no further movement, he retired to the heights again.

9. The seamen of the Guard, under their commander, the

celebrated Colonel Baste, were kept ready, in boats armed with howitzers, to convey the flat-boats across the river, and to *cover the debarkation* of the troops from them with their fire.

4. THE CROSSING AND DEBOUCHING.

1. Everything being now ready, at dusk, on the 4th of July, 1809, *the three corps silently approached their stations* on the right of the island ; Massena's, opposite Enzersdorff ; Davoust's, a little lower down, opposite the Maison Blanche ; and Oudinot's, lower still, facing the wood near the confluence of the two arms.

2. At 9 P. M., *the crossing began*. Fifteen hundred men of a division of Oudinot's corps went over in the five flat-boats assigned to that corps, escorted by Colonel Baste's flotilla. In fifteen minutes the crossing was effected, the sentinels near the landing secured, and the redoubt at the Maison Blanche captured ; all with the loss of but a few men. The rest of the division then crossed, and covered the making of the bridge, which was completed in two hours. The corps stood meanwhile drawn up in close column, in readiness to cross.

3. Then, Oudinot's bridge being completed, it being now 11 P. M., *the same operation* was performed, and in precisely the same manner, by Massena's corps.

4. When Massena's bridge was completed, Davoust's corps followed the example of the two others ; and *when the three bridges were finished*, the three corps defiled rapidly over them in close columns ; thus affording no opportunity to the enemy to crush the different corps in detail.

5. The *raft bridge*, which had been constructed simultaneously with the two latter, was crossed at the same time by the

artillery and cavalry of Massena's and Davoust's corps.

6. Napoleon's intentions being now unmasked, *the redoubts opened their fire*; first, to demolish Enzersdorff, so that the enemy should not use it as a *point d'appui*; secondly, by a deluge of grape, to clear the plain for the deployment of the French masses.

7. To *bewilder the Austrians*, the batteries on the left side of the island opened fire also. With the same object, and to increase their confusion, Colonel Baste kept cruising about with his flotilla; firing at every point where a fire from the enemy was perceived.

8. *Oudinot's corps*, like an inundation, surrounded the Sachsengang Castle, and poured into it an incessant shower of shells. *Massena's corps*, while awaiting its artillery, kept near the river bank under cover of the fire from the redoubts which swept the plain in front, and was gradually driving back the Austrian Advance Guard.

9. By daylight, at 3 o'clock A. M., *the whole army was over*, except a portion of the artillery and cavalry, which was still thronging to the raft bridge, followed by the Imperial Guard, or reserve; and 70,000 men were actually in line of battle.

10. By Napoleon's order, *Enzersdorff*, which was already half destroyed by the bombardment, and was defended only by a few trifling field works, *was carried by storm*; while the Sachsengang had to surrender to an overwhelming attack by artillery and infantry.

11. The Archduke Charles was surprised at these movements, but supposed that *but a small part* of the French were yet over, and that it would require twenty-four hours to cross over their entire force and deploy it; which would give him time to attack them with greatly superior numbers. On his

brother, the Emperor, questioning him, he admitted that the French had forced a passage, but intimated that he was only letting them pass over, "that he might throw them into the river." "Very good," said the Emperor, "but don't have too many of them to throw into the river."

12. Napoleon then caused *three more bridges* to be laid down, making seven in all, so as to be sure to have enough in case of a retreat. And, in order to secure these bridges against a sudden irruption by the enemy on his rear, three *têtes de pont*, which had been already prepared, partly of fascines, and partly of bags of earth, were rapidly thrown up.

13. Seven battalions were left *to guard the island* of Lobau; two of them stationed at the bridges opposite Enzersdorff; one at the bridge near the confluence of the two arms; one at the old bridge at the left; and the remaining three in reserve, at the centre of the island.

14. The troops being all over, *the deployment began*. The left remained stationary near Enzersdorff and the Danube, while the right was marching towards the heights of Wagram; the whole army thus performing a grand wheeling movement, pivoting on its left.

The deployment was in two lines, with a reserve in the rear, consisting of the Imperial Guard and the Cuirassiers. The several corps, by continually inclining to the right, gained their proper intervals as they advanced. They were preceded by batteries of artillery, which fired in advancing, and by detachments of cavalry. These were constantly clearing the ground to a considerable distance in front, like a line of skirmishers, in order to cover and make room for the deployment.

In the course of this grand movement, two or three villages that lay in the route of the advancing lines, were attacked, de-

fended and taken ; and, once or twice, detachments of Austrian cavalry, endeavoring to support their infantry, were overthrown or driven back.

15. Massena, slowly moving up the Danube, *occupied Essling, and then Aspern*, as he advanced ; for Klenau's corps, seeing their works thus taken in reverse, retired to join the main army.

16. By 6 P. M., on the 5th of July, the French army *had completely taken up its position*, extending nine miles in front of the heights of Wagram ; having crossed the Danube and deployed in the face of a hostile army of 140,000 men and 400 guns ; having lost in the whole operation, but a few hundred men ; and having killed and wounded 2000 Austrians and taken 3000 prisoners.

II. The Defence of a River, and Opposing a Passage.

1. Since the recent improvements in naval construction and ordnance, the most powerful auxiliary in the defence of a navigable river would seem to be *an ironclad gunboat* ; at least, within points that could be reached by it in a few hours sail. At the first signal from our land force, such a vessel could come up and take a raking position that would sweep the crossing troops in flank. She would have little to fear from passing any hostile fort or battery on the way. Nay, with vigilance and activity, such a vessel could prevent the completion by the enemy of any important work commanding the river, and could easily destroy or silence a battery or fort armed only with field ordnance.

At no time after the panic at Bull Run could the Confederates, though they should gain possession of Arlington

Heights, have crossed the Potomac in front of Washington; for our gunboats in the river would have swept them in flank and destroyed them while crossing. These gunboats thus constituted an impregnable defence of our national capital in front during the whole war; so that the enemy could seriously threaten it only in rear, and that only by a long and dangerous line of operation.

2. It is very dangerous *to leave standing a practicable bridge* over the river we are to defend. But when, for any reason, such a bridge is allowed to remain, we should be either ready to blow it up at a moment's notice, or prepared with a sufficient force to oppose the enemy's crossing. And in order to have ample notice of his approach, we must occupy the further end of the bridge with a picket, which must keep out cavalry patrols night and day to some distance in front, and on each flank; and be ready to retire instantly on the arrival of the enemy in force.

3. The possession of a bridge, affording a prompt and safe means of passing a large force over to the enemy's side, and thus, at some critical moment, of threatening his flank or rear, may often gain for us an important strategic advantage. But, in such case, our position on the further side should be made secure by *a strong bridge-head*; in the absence of which it would be rash to keep posted there any larger force than a mere picket of observation.

In November, 1863, while the Confederate army under General Lee was in position on the south side of the Rappahannock, the Federal army being on the opposite side, the Confederate commander had allowed a certain pontoon bridge distant five miles from his left flank to remain standing, in order to facilitate any movement he might make to threaten his enemy's

communications with Washington. The river in that neighborhood being then unfordable, this bridge afforded the only avenue for crossing or for retreat. The head of the bridge was guarded by an entire brigade; yet its defences on that side consisted only of a very small redoubt, an open work, which was a mere curtain with two short flanks, and a rifle trench or two connecting the works with the river. The works were armed with a field battery of four guns. They had been constructed and used by the Federals against Confederates crossing from the South, and though they had been turned, were still suffered to slope towards the North, and were unprotected in front by any ditch whatever. Moreover, the ground on either flank was such as to cut off the view, and enable an enemy to steal up unperceived to within a very short distance of the defences, such as they were. On the Southern or Confederate side of the river, to command the approaches, pits had been dug for sunken batteries, but they remained unoccupied. Two hills in rear of the bridge were crowned with a battery each; the guns of which however, were of too short range to carry effectively to the opposite side.

A large Federal force suddenly advanced and attacked the Confederate detachment at the head of the bridge, which held out bravely for some time against greatly superior numbers. But the fire of the Confederate batteries in rear of the bridge was so ineffective, and so much time was required for reinforcements to arrive from the main body that the greater part of the brigade, as also of another brigade, the only support that had time to reach there from the opposite side, together with the battery which armed the works, were captured or destroyed.

This disaster is attributable to the following errors :

(1.) Posting too large a number of troops, considering the nature of the defences, on the enemy's side, instead of a mere picket of observation; thus leading to the sacrifice of nearly two brigades and a battery.

(2.) Attempting to hold a bridge distant five miles from the main body; a distance too great for the prompt and heavy reinforcement which would be required by a single brigade posted on the enemy's side of the river in case of an attack, unless covered by a strong bridge head and its proper auxiliary defences.*

(3.) The feebleness of the works relied on for the defence of the bridge in front.

(4.) The entire insufficiency of the arrangements on the Confederate side for getting an effective fire on the Federals as they approached, or during their attack.

4. Where the course of a river is so short that it would be possible, by holding a central position, to concentrate our main force in half a day at either one of its extreme points; that is, where the length of the river does not exceed thirty miles, with easy communications on our side, a very considerable force, skilfully disposed, and vigorously handled, may suffice to guard it effectually.

But where the river is of *any considerable length*, it is beyond the power of even the largest army to prevent the enemy's crossing it. For, if our army remain concentrated at one or two of the most probable points of passage, this will leave all other points open to the enemy; at one or more of which he will cross, either by fording, or, in the absence of fords, by means of boats or of military bridges. If, on the other hand, we undertake to

* See A Treatise on Intrenchments, *Tête-de pont*, p. 37.

guard the entire river, this will require such extreme dispersion of our troops as to enable a concentrated enemy, by an easy feint, to force his passage at any point he may choose.

5. The *wider and deeper* a river, the more formidable is the task of crossing it. Thus all rivers are more easily defended in the lower, than in the upper part of their course.

6. To defend a river, *the proper dispositions* are as follows :

(1). Break down or blow up the bridges, destroy the fords, and remove or destroy all boats and other means of transportation.

(2). Take up a position behind that part of the river where the enemy will be most likely to cross.

(3). When the point of passage is uncertain, post the main body in some central position between the extreme limits of that part of the river which we have force enough to effectually defend.

(4). Post heavy advance detachments, consisting of the three arms, at one or two of the most probable points of passage within these limits, with orders to use every effort to delay the crossing until the arrival of our main body.

These detachments to be connected by chains of vedettes or sentinels, or by signal stations, posted along the river bank for the purpose of giving the earliest warning at what point the enemy has begun to cross.

(5). Where the ground on our side is broken or difficult, cut one or more roads to facilitate our intercommunications and a prompt concentration.

(6). In order to have early notice of the enemy's crossing beyond the immediate sphere of our defensive operations, in order that we may not find a flank of our position suddenly turned, post small detachments of light cavalry in observation

at points of the river at some distance beyond each of our flanks.

7. On *hearing of the enemy's attempt to cross*, provided it be apparently a serious one, and not a feint, the main body will march rapidly to the point threatened ; hurrying on its cavalry and light artillery in advance, so as to re-inforce the detachment there as promptly as possible.

8. If we have discovered the enemy's intended point of passage, we must be careful *not to let him become aware of it* ; for this would induce him to select some other point where we might arrive too late. We must, therefore, conceal, so far as practicable, our preparations to oppose him ; assembling the required force by a sudden concentration from different points out of the enemy's view, and masking our movements by keeping up our usual show of force in his front.

9. If any of the enemy's troops *have already crossed*, they must be attacked vigorously by the force present ; and every effort should be made to prevent their being re-inforced from the other side ; or, if this cannot be done, to prolong the affair until the main body arrives.

But if the enemy commit the error of throwing a detachment over a bridge without instantly supporting it with the rest of his force, we may allow it to advance far enough from the bridge to enable us to cut it off, and make its capture or destruction certain.

10. Sharpshooters in *rifle-pits* or other shelter, covering with their fire the ground at and around the landing place, will be a most effective means of preventing the construction of a bridge, by destroying the enemy's workmen.

By this means the completion of three bridges for the crossing of General Burnside's army of 100,000 men to Frede-

- ricksburg was delayed for sixteen hours by a single Confederate brigade.

11. If the enemy have committed the mistake of not preceding his working parties by troops in sufficient force to drive away our sharpshooters, it will be best not to open fire on them till they have come within very close range, or have *even begun their labors*. But in the contrary case, the detachments must be destroyed, if possible, during their crossing.

12. Our *artillery* should be posted in commanding positions ; a part of it so as to enfilade the enemy's batteries ; the remainder, at some 300 or 400 yards from the point of landing ; upon which it should be ready, on the enemy's arrival, to keep up an incessant shower of grape and canister, or of shell, according to circumstances.

13. In opposing the passage, *our guns* ought,

(1). By a fire of shell or case shot upon the point where the enemy commences his crossing, to endeavor to throw his troops into confusion, or deter them from their attempt to cross.

(2). By a fire of solid shot from our heaviest calibres, to endeavor to sink his boats on their passage.

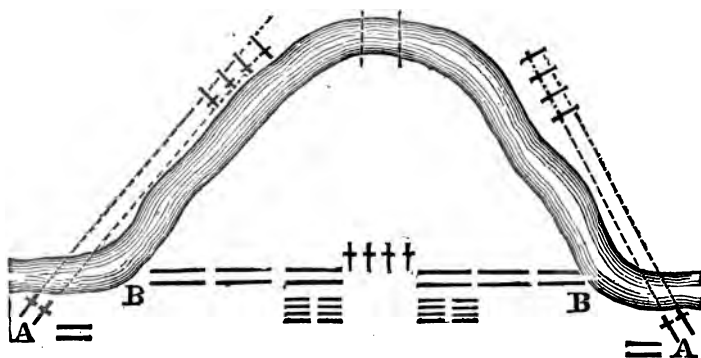
(3). By an incessant fire of case shot and shell on the point of landing, to endeavor to prevent his troops from forming.

If the enemy succeed in forming, our guns should rake his columns with solid shot ; but when a flank fire on them can be obtained, grape or case shot should be used.*

14. In order to obtain a cross-fire on our side, the enemy will probably have chosen for his place of crossing a bend of the river with the re-entering angle on his own side. But this will give us *two advantages* ; for it will enable us

* *Vide* TACTICAL USE OF THE THREE ARMS, p. 79.

FIGURE 7.



- (1.) To enfilade his batteries ; as at A. A. ; and often,
- (2.) To support both of our flanks on the river ; as at B. B. ; the bank of the river on our side forming two sides of a triangle, the base of which, when the ground is not unfavorable, we can adopt for our position. Or, if the ground be too narrow for this, we may form in a semi-circle opposite the point of crossing, with both flanks resting on the river ; and if the enemy has completed his bridge, this will be the most favorable position to prevent his debouching from it, as in the case of any other defile.

15. The most effective use to be made of our *cavalry* will be to charge the enemy's columns in flank as they debouch from the bridge ; and it should be so posted as to enable it to do this, provided it can remain sheltered, meanwhile, from the fire of the enemy's batteries.

16. Finally, if there be any *ford* or *bridge* at some distance above or below us, a detachment must be placed there in observation, or else patrols must be kept moving in that direction. At the very least, by means of signal stations, we should have

timely warning of any attempt by the enemy at crossing in order to take us in flank; which he would be very apt to do, supposing our attention to be exclusively directed to opposing him in front.

At Lodi, the Austrian General Beaulieu having neglected this precaution, Beaumont's cavalry crossed the Adda at a ford at some distance above, and suddenly charged his battalions in flank at the very moment they were advancing to drive back Bonaparte and his grenadiers debouching from the bridge. The effect of this charge was decisive; and the Austrians were forced to retire.

17. *An example of skilful dispositions* to oppose the crossing of a river is furnished by the battle of Wavre, which was fought on the same day as the battle of Waterloo, at the distance of ten miles from it.

Blucher, on hurrying off to join Wellington at Waterloo, had left Thielemann's Corps for the defence of Wavre, which is on the left bank of the River Dyle. The river was crossed by bridges at different points, one of them being at Wavre. It was necessary to defend all these bridges, as well as Wavre itself; since, if the French should force either of them, it would enable them to turn the Prussians' whole line of defence.

As a direct attack on Wavre, being the most hazardous to the enemy, was the one least likely to be made, the Prussian General posted there merely light troops enough to hold the place against a sudden assault, but with supports at hand. His main force he divided into several reserves, posting them in such a manner that they could rapidly concentrate at the point that should be principally threatened, and yet protect his flanks if the French should deploy in force enough to extend beyond them.

The result was that the French, under Marshal Grouchy, though fighting desperately, and in greatly superior numbers, were repulsed at almost every point, and with considerable loss.

III. Passage in Retreat.

1. Crossing a river in retreat in presence of a pursuing enemy without the protection of a bridge-head, is a most difficult and dangerous operation, and by an army demoralized by a recent defeat, generally an impracticable one.

It will therefore be highly important to direct our march upon that point of the river which offers *the most topographical advantages in covering the crossing.*

2. If our retreat be through a mountainous or difficult country, we may be able to *retard the enemy's pursuit* by threatening his rear by a large detachment, or by posting one or more smaller ones at the outlet of defiles through which he must pass ; and thus obtain more time to perfect our arrangements for crossing. In such an emergency, even minutes will be precious.

3. If there be time, on arriving at the point of passage, *strengthen the ground* around it as much as possible with field-works, so as to prevent the enemy from pressing too closely on our rear.

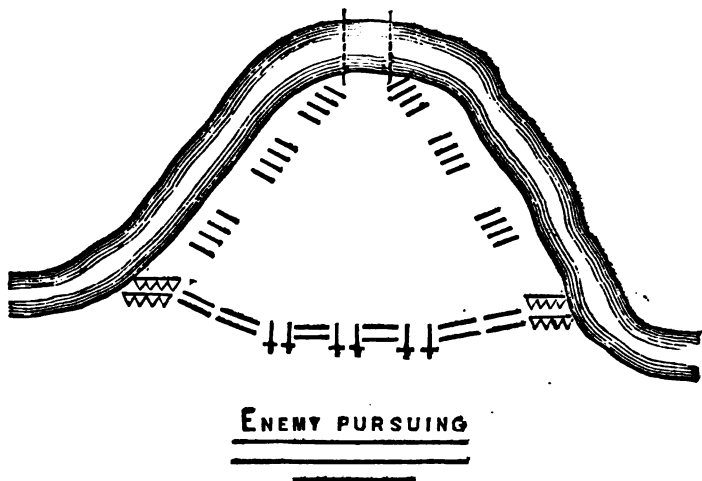
With the same view, plant batteries on commanding points, to cover as much ground in rear as possible by their fire.

4. A *city, town or village* presents a favorable point to cross from, when not occupied by the enemy ; since, by the shelter it affords us during the operation, it is virtually a *tête de pont*.

5. In forcing the passage of a river, we have seen that the point of passage should be at an angle of the river with the

re-entering on our own side. But in crossing in retreat, the re-entering should be on the *opposite* side ;

FIGURE 8.



Because :

(1). It is on that side that we must plant our batteries to keep back the pursuing enemy ; and

(2). This enables us to rest both our flanks on the river, while presenting a front to the enemy to cover the crossing.

6. Again, for a similar reason, it is *the ground on the side to which we cross* that should command that on the side we cross from.

7. To prevent the confusion which is one of the *chief dangers* in this operation, the march of the different corps should be so regulated that each shall arrive at the point of crossing precisely at the proper moment.

8. The *heavy guns* should be in advance of all the corps, so

that they may be got over first. Their long range fire from the opposite side will be a powerful support in the crossing.

9. The Rear Guard should consist of *the most reliable troops*; for on its valor, steadiness and discipline the safety of the whole army will mainly depend. It should consist of the three arms, with a large proportion of artillery, to enable it to keep the enemy at as great a distance as possible; but of the lightest guns, as these are the most easily removed. Whenever the enemy attempts to close on our troops, he should be driven back by sudden, short and violent charges of cavalry.

10. The *best formation* to cover the crossing is one that resembles the outline of a *tête de pont*. (Figure 8.) During the crossing, both flanks are kept supported on the river. The troops retire by battalions successively; marching by the flank, either by one wing, or by both wings simultaneously. As they fall back towards the crossing, they preserve their compact order. The whole movement is covered by the Rear Guard, which crosses last; its artillery and cavalry before its infantry.

IV. The Forcing and Defence of Bridges.

A. THE ATTACK.

1. The *most favorable conditions* for carrying a bridge are, that the ground on our side be broken or wooded, so as to afford us shelter up to the moment of crossing; and that the ground on the opposite side be such as to afford no shelter to the enemy.

On the other hand, the worst possible conditions for attack are, where the ground is open on our side, but sheltered on the enemy's.

2 A *city or town* affords as effectual shelter from fire as broken or wooded ground. To carry a bridge, therefore, crossing from an inhabited place on our own side is comparatively an easy task ; while the carrying of a bridge, crossing from exposed ground on our side to a city or town in possession of the enemy, is always a bloody and difficult operation, and often a desperate one. It should therefore never be attempted unless first, the bridge be a very short one ; or secondly, we have been able to silence the enemy's artillery.

3. To carry a bridge, we first *plant our batteries* in such positions as will best enable us to silence, by a concentrated fire, the enemy's guns that play upon the bridge.

4. Auxiliary to these batteries, *sharpshooters* are placed under cover, along the bank, or in rifle-pits, to pick off the enemy's gunners.

5. On the enemy's guns being silenced, or their fire being sufficiently weakened, a detachment of picked troops, kept till this moment under cover *as near to the bridge as possible*, suddenly rushes over in close column, charging the enemy on the opposite side with the bayonet, and securing, first of all, the guns playing on the bridge. The leading column is followed by a strong support ; and unless this column be actually driven back, all our troops should immediately follow, in close columns, at double quick.

At the battle of Antietam, in September, 1862, General Burnside was charged with the duty of carrying the bridge leading to Sharpsburg in front of his position. The troops sent forward for this purpose had to march some 300 yards down the river, where the road made a sudden turn to the right, nearly parallel to the river ; and 200 yards further on was the bridge. The whole of this latter distance the storming

troops were exposed to a destructive enfilading fire of artillery and of infantry, posted in a strip of woods across the stream, at from 50 to 150 feet only from the flank of our column. Several gallant attempts were made to carry the bridge; but they all failed. Finally, in a last and successful attempt, the storming troops, instead of marching down by the road, made their rush from under the cover of a mountain spur close to the bridge; while our artillery fire in support, now no longer desultory, was concentrated on those of the enemy's guns that were playing on the storming troops; and the bridge was carried.

6. Where the bridge is *very short*, it may not be necessary to wait till the enemy's guns are silenced; but, from the moment our columns rush forward to cross the bridge, they should be protected, as far as possible, by a rapid and concentrated fire, a *feu d'enfer*, as the French term it, on the guns that rake the bridge.

7. Before our troops cross, when practicable, our engineers should ascertain whether the bridge has been *mined*. If it has been, the crossing should not be attempted, except in those cases where a sudden rush would probably prevent the enemy from springing the mine.

If we find the bridge planks to be torn up, we may strip boards from the nearest building to replace them.

8. A *cavalry ford* in the neighborhood, when the enemy is not vigilant, may enable us to carry the bridge by the aid of a sudden attack on his flank or rear.

In 1796, the Austrian army was drawn up behind a bridge over the river Avisio, in Italy, to oppose the crossing by the French. Bonaparte sent three squadrons of cavalry to ford the river at another point and charge the enemy in rear, while he

attacked them in front. The movement succeeded perfectly, like a similar one at Lodi; and the Austrians were routed and driven away.

9. To attempt to carry a bridge of any *considerable length*, like the one over the Potomac at Washington, for instance, would be a desperate undertaking; as the fire of a few guns raking the bridge would entirely destroy the storming column before it could complete its crossing. Such an operation, therefore, would not be feasible, until the enemy's guns have been all silenced; which would require, on our part, an overwhelming superiority in artillery. Moreover, in the case of a long bridge, even after the enemy's batteries should be all silenced, he would have ample time to blow up a section of it before any of our troops could complete their crossing.

B. THE DEFENCE.

1. The proper position for the defence of a defile is in its rear; and the only suitable position for the defence of a bridge, which is simply a straight and narrow defile, is *behind it*.

2. The *defensibility* of a bridge depends chiefly on the nature of the ground on both banks of the river.

(1.) If the ground be open and exposed on both sides, the bridge is defensible. But as the attack is naturally more powerful than the defence, especially a passive one, the chances would be in favor of the enemy; and if, in addition, his artillery be decidedly superior to ours, or the bridge be a short one, it is not defensible.

(2.) If the ground be broken or wooded on both sides, the bridge is defensible; the opponents contending on equal terms.

But the chances would nevertheless be with the enemy, as the attacking party.

(3.) If the ground on our side be exposed, while, on the enemy's side, it is broken or covered, the bridge is not defensible. So, when the ground being open on our side, the bridge crosses to a town or village in the enemy's possession.

(4.) When the broken or covered ground, or the city or town is on our side, and the open ground is on the enemy's, this is the most favorable case, and the bridge is easily defensible.

Generally, other things being equal, the bridge is defensible in direct proportion to its length ; the carrying of a long bridge and the defence of a short one being, both of them, operations of great difficulty and danger ; while the defence of a long bridge and the carrying of a short one are both easy, and should generally be successful.

3. When a bridge is *not defensible*, it should be destroyed or rendered impassable before the enemy reaches it ; for this is seldom successfully done under fire.

4. Neither should a portion of our force be left *in front* of the bridge ; for if it should be driven back, its retirement would paralyse the defence in rear, the enemy crossing pell-mell with our own troops, and so carrying the bridge with ease. And of its being driven back, there would be always great danger ; for troops attacked in front of a narrow defile, are apt to think, first of all, of securing their retreat through it. At the bridge of Borghetto over the Mincio, for instance, the Austrian army, which was drawn up behind it, had left an advanced guard in front of the bridge of 3,000 or 4,000 infantry, and 1,500 horse. On the approach of the French in force, fearful of being driven into the river by superior numbers,

this advanced detachment made but a slight resistance, and then rapidly retreated across the bridge. The French, following close at their heels, were thereby enabled to carry the bridge with little or no loss.

But this does not apply to the case of an advanced post placed in front of a bridge for the purpose merely of observation, and whose duty it will be to retire on the enemy's approach.

5. In *defending* a bridge ;

(1). Post the infantry and cavalry round the *débouché* from the bridge, at charging distance from it ; by preference, when the ground permits, the infantry in front and the cavalry on the flanks ; one or more intervals being left for the play of our guns. Their position should be sheltered, so far as possible, from the enemy's fire.

(2). Two positions should be occupied by our artillery ; one commanding the enemy's batteries on the opposite bank ; the other opposite the centre of the bridge, so as to sweep it in its whole length.

(3). The former of these batteries should play exclusively on the enemy's guns, and try to silence their fire. The latter one should not open till the enemy's column appears on the bridge, when it should instantly commence a rapid and incessant raking fire.

Until this battery opens, it should be protected, as much as possible, from the enemy's guns and sharpshooters, by a rise in the ground, an *épaulement*, or other cover.

(4). If the bridge rises in the centre, our guns must be so posted as to rake the further slope ; otherwise, the rise would shelter the enemy.

(5). Rake the bridge, not with grape or canister, but with ball. The moral, as well as the physical effect of the grape

and canister is usually spent on the leading files ; those in rear see nothing of their destructive effect, and the head of the column is not allowed to stop, being pushed on by those behind. Not so with round shot, which penetrates with murderous effect to the very rear of the column. At Lodi, the Austrian artillery used grape. If they had used ball, Bonaparte could hardly have succeeded in forcing the passage.

(6). If, nevertheless, the enemy's columns succeed in crossing the bridge, on their debouching they must be instantly charged in front with the bayonet, and in flank by the cavalry.

(7). Where it is intended to blow up a bridge on the enemy's succeeding in forcing it, if the bridge be a short one, this cannot be done too soon ; as a sudden rush of the enemy across it will generally prevent the springing of the mine in proper time.

6. The Peninsular War furnishes a remarkable illustration of the *fatal consequences of unskilful dispositions* for the defence of a bridge.

In 1808, the Spanish General Cuesta took post to oppose the passage of the French over the bridge of Cabezon. For this purpose, he placed in front of the bridge a line of cavalry ; behind this cavalry, a line of infantry ; behind the infantry, on the bridge itself, some cannon ; and the rest of his army behind the river.

The French cavalry, on arriving, instantly charged this stationary line of cavalry ; which, as was to be expected, it broke and drove upon the infantry behind it ; which was thus thrown back in confusion upon the bridge and on the guns. The result was that the bridge was carried with a loss to the Spanish of 500 men ; while the French loss was but 15 killed, and 20 or 25 wounded.

In this affair, four blunders of the Spanish commander are patent :

- (1). Placing a force to fight in front of the bridge.
 - (2). Posting a line of cavalry directly in front of a line of infantry; which, if driven back, it would be sure to overthrow.
 - (3). Allowing a line of cavalry to passively receive a charge from the enemy's cavalry, instead of manœuvring, or of anticipating it by a counter charge; thereby rendering its defeat certain.*
 - (4). Posting artillery on the bridge itself, and behind the troops; thus not only rendering it useless, but ensuring its capture if the troops in front of the bridge should be forced back.
7. The attack and defence of a bridge protected by a *tête de pont*, belongs to the subject of *Intrenchments*.†

V. Forcing and Defence of Fords, Dikes and Causeways.

A. FORDS.

1. The *maximum depth* of a ford for infantry is three feet; for artillery, two feet four inches; for cavalry, four feet.
2. The best place for fording a stream is where it is *broadest*; for there it has the least depth, and the current is the least strong.
3. There are generally *several fords near together*; therefore, when one has been found, diligent search will usually find others in its neighborhood.
4. In *forcing* a ford, the cavalry generally leads, followed by horse artillery; our other artillery having taken a command-

* Vide Tactical Use of the Three Arms, p. 111.

† See a Treatise on Intrenchments, p. 37.

ing position, to obtain a cross fire on the opposite side. The bank on our side is lined by sharpshooters, so far as possible, under cover.

5. When the ford is *deep and dangerous*, single horsemen are stationed below it, across the stream, to pick up infantry soldiers that may be carried away.

6. Fords are either *obstructed* or *defended*. A ford may be obstructed,

(1). By throwing in trees with the branches on, their heads turned towards the enemy's bank; or obliquely to it, if the current is strong; as, in this position, they will be less likely to be swept away.

(2). By throwing in harrows, secured to the bottom by stakes and heavy stones.

(3). By digging a trench across the ford.

Though the enemy may remove these obstructions, time is nevertheless gained by them.

7. Fords are *easier to defend* and *harder to force* than bridges, because the impulsion and concentration of a storming column that attend the carrying of a bridge are not possible in the case of a ford.

8. A ford, like a bridge, is defensible only on the *hither side*. Troops should never be stationed on the further side of a ford; for, besides other inconveniences, they indicate to the enemy where the ford is.

9. The passing of a ford can be *opposed* only by occupying points under cover, near enough to bring a strong fire on the enemy while crossing. But as his troops reach the bank, they may be charged in the same manner as troops debouching from a bridge; and usually with more effect, since they must generally arrive much scattered, and in no formation whatever.

B. DIKES AND CAUSEWAYS.

1. The forcing and the defence of a dike or causeway are conducted in a similar manner to the forcing and defence of a *bridge*.

2. To force a dike, our guns take a suitable position to *silence the enemy's batteries* commanding it, before our storming column rushes on. Sometimes our sharpshooters may be able to steal up unseen along the sides of the dike, and assist in keeping down the fire of the enemy's batteries, by picking off the gunners.

3. But if the dike is *so long* that our artillery and skirmishing fires are ineffective, it will be very difficult to carry it by open force. In that case, if it cannot be turned, it might be better to carry it by surprise.

4. If the enemy commit the blunder of posting any of his troops *on the dike itself*, a storming column may then rush forward, drive them back, and pass over with them; thus paralyzing the fire of the enemy's batteries.

This mistake was committed by the Austrians in several instances in the battle of Arcola, in 1796. One of the dikes they were defending was attacked by a French column under Massena. The Austrians marched to meet the attack. Massena allowed their whole column to get fairly on the dike, and then made a vigorous charge upon it, which drove it back in disorder, with great loss.

The same thing occurred at the dike that Augereau was charged with carrying.

At another dike, a French column had been driven back. Bonaparte then placed a regiment in ambush, lying on their

faces, in a little wood skirting the side of the dike. A column of 3000 Croats was sent down to clear the dike of the French. At the proper moment, the troops in ambush rose, poured in a volley, and charged the Croats in flank. They were overthrown into the morass, where they all perished.

5. It is obvious from what has been said, that the *best defence* of a dike, and the only one that, in general, need be used, is a rapid and incessant artillery fire, raking the enemy's columns with ball from the moment they appear on the dike.

THE ATTACK AND DEFENCE OF OPEN TOWNS AND VILLAGES.

Under this head, we shall treat of the following subjects :

- I. THE ATTACK.
- II. THE DEFENCE.
- III. THE ATTACK AND DEFENCE OF BUILDINGS AND ENCLOSURES.
- IV. POPULAR INSURRECTIONS IN TOWNS OR CITIES.

I. The Attack.

1. A town or village *commanded by hostile intrenchments* should not be attacked until these intrenchments have been carried. For, a place so situated, when taken, would be untenable ; and it would be a useless sacrifice of life to attack and capture what we cannot hold.

2. Attacks of villages occupied by the enemy *are to be avoided*, if possible ; as, when properly defended, they are usually very bloody. A village turned, being thereby isolated and cut off, will generally become useless to the enemy.

But when a village, or a cluster of buildings, is a key to the enemy's position in a battle, it must be taken at all hazards.

3. The attack should be made by a force *amply sufficient to carry it at once*.

Military history shows by numerous examples that the difficulty and danger of such an operation are generally underrated; leading to successive attacks, which cause, in the end, a greater loss of time and blood than if an ample force had been used in the first instance.

4. To ensure the success of the attack, and with as little loss as possible, the assault should always be preceded by a *bombardment*; in order to silence the enemy's batteries at the flanks of the village, and those protecting, by a cross fire, the ground in its front. Till this has been done, the infantry should not be sent forward.

5. The *best points* to attack are,

(1). Those at which there are no defences, or where the defences are weak.

(2). The flanks, or the rear, when not protected; as we should thereby turn the enemy's defences.

6. The *best positions for our batteries* are

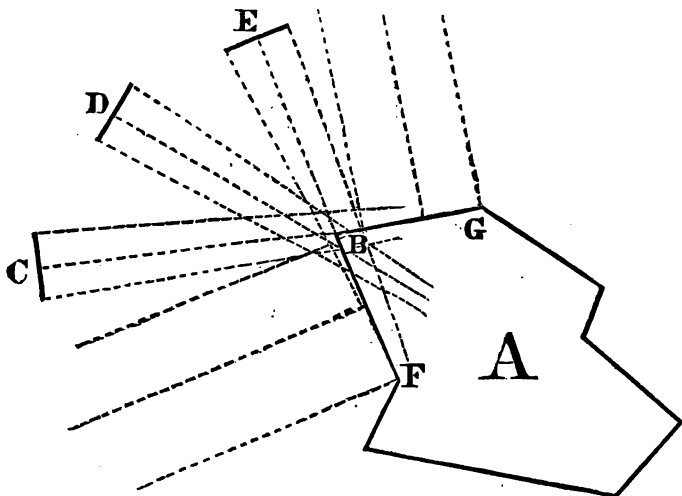
(1). Commanding points, giving a plunging fire into the village.

(2). Opposite the salient points of the village. For these are usually unprotected by flanked dispositions, and on them, moreover, we can better obtain a cross fire. (See Figure 9.)

7. The dotted lines show the directions of the fires from two sides, F B and B G, of the village A, and also those from the assailants' batteries, C, D, E. From the figure, *four things* are apparent:

(1). That these batteries cannot be replied to, as the defend-

FIGURE 9.



ers have no fire over the ground in front of the salient B.

(2). That the cross fire of these batteries upon the salient B must soon demolish the defences at that point, and thus open it to our assault.

(3). That this cross-fire will also effectually protect our assaulting columns as they advance over this sector without fire, to storm the salient.

(4). That this position for our batteries will enable us, moreover, to enfilade the batteries of the defenders; as the guns along the side B F may be raked by our battery E; and those along the side B G, by our battery C.

8. When our batteries have once opened their fire, the bombardment should be *unremitting*, so as to leave the defenders no time to repair the damage done to their works.

And it should not be *desultory*. An indiscriminate artillery

fire will accomplish little or nothing. It should be always concentrated on some object ; as, to dismount the enemy's guns, to destroy some strong hold of the defenders, to throw shells into enclosures, or to clear the way for our assaulting columns.

9. When our infantry advances, it should be, when possible, *under cover*, to the very last moment. If there are no engineer troops, a few reliable men used to the ax and the pick should lead the advance, to level obstructions.

10. The infantry advances either in *columns of attack*, or in *open order*, as skirmishers, according to circumstances ; this latter order being the best, when the ground over which the troops are obliged to approach affords no cover.

11. When the advance is in column, it should be *covered by our batteries*, which continue their fire till our own troops would be exposed to it.

The columns should be accompanied by a few pieces firing grape or canister. When the infantry charges, the pieces are withdrawn.

12. When the attack is made in open order, the infantry is divided into *three parts*, Skirmishers, their Supports, and a Reserve. The skirmishers close on the enemy, relying chiefly on the bayonet. The supports keep at about one hundred and fifty paces in their rear ; the reserve, about the same distance behind the supports.

13. If the attack succeeds, it should be *followed up closely*, so as to give the enemy no time to rally and make a stand.

14. If the enemy *form across a wide street*, our skirmishers, covering themselves as they may, force him by their fire to deliver his ; when the supports and the reserves rush up and charge with the bayonet.

15. The entrance being secured, the reserve hurries to the *main central point* of the village to drive away the enemy's reserve; reinforcing the supports everywhere.

16. No barricade or well defended building should be stormed till first *shattered by our artillery fire*. If the building is strong enough to resist artillery, it should be undermined and blown up.

17. If the defence is very obstinate, it may be necessary to penetrate, by the use of the pick, *through and under the walls of the houses*; the roofs of which are immediately occupied by our sharp-shooters, who thus obtain a plunging fire into the streets and squares.

This course had to be adopted at our siege of Monterey, in the Mexican war; and when a portion of our troops had thus burrowed their way into the heart of the city, it surrendered.

18. As soon as the village is carried, our troops should be *promptly rallied*, re-formed, and disposed for defence.

19. In attacking a village, *cavalry* can usually act only as a reserve, to repulse sorties, to secure the flanks of our infantry, or to cover it, if repulsed.

II. The Defence.

A. GENERALLY.

1. A village cannot be considered as defensible, if easily *accessible on all sides*; or if *commanded* by the enemy within cannon shot, especially when built of wood.

2. The most *important requisites* to enable the garrison to make a good defence are

(1.) That the approaches may be swept by the defenders' fire.

(2.) That the flanks of the village be supported by natural or by artificial obstacles.

(3.) That the ground in rear be favorable for retreat ; for troops who suppose their retreat will be cut off in case of disaster, are liable to lose courage.

3. If the place be *commanded by heights* in front, it is there that the defence must be made ; since, on these heights being once occupied by the enemy's batteries, having a plunging fire into the place, it will be no longer tenable.

Thus, in 1805, the city of Ulm was compelled to surrender to Napoleon, with its garrison of 30,000 Austrians, as soon as the French had carried the heights of Michaelberg and Frauenberg, by which the city is commanded.

So, Harper's Ferry being situated in a hollow which is commanded by the crest of the ridge across the river known as Maryland Heights, can be successfully defended only by occupying and intrenching those heights.

4. When, for any reason, it is not practicable to occupy a point commanding the village, the next best thing to do is to *get the exact range of it* by constant practice with our artillery ; so as to be able, by a rapid and destructive fire, to drive the enemy away the moment he attempts to occupy it. For this purpose, the ground in question must first be laid bare and open for our fire, by clearing it of everything that would afford the enemy shelter.

5. A very large number of troops is not usually required for the defence of a village. But if the place be so small that there is danger of its being attacked *on all sides at once*, the rule as to redoubts will apply ; and it will require a garrison equal to twice the number of yards in its exterior line of defence, and in addition, half as many more as a reserve.

B. PREPARATIONS FOR DEFENCE.

In preparing to defend a town or village ;

1. *Reconnoitre the ground* in the neighborhood, in order to become acquainted with the approaches.

2. Level, burn or destroy all woods, buildings, fences, and other covers *within musket range*, from which the enemy's sharpshooters might securely fire at the defenders.

3. *Obstruct all the approaches* that are under the defenders' fire, by abatis, entanglements, barricades, ditches, &c.

4. *Strengthen the accessible places* by means of parapets, stockades, or barricades.

5. *Solid buildings* on or near the exterior line of defence may serve as bastions, and the walls and hedges between them as the curtains of an intrenchment.

6. *Churches and church-yards*, which are usually walled around, afford good points for defence. The church and the church-yard walls may be loopholed ; and scaffolds may be erected on the inside, to give a fire from the church windows.

7. *Erect barricades* across those streets through which the enemy will have to pass. The houses flanking these barricades should be loopholed. The barricades should therefore be located between houses which will afford solid flank defences.

8. To make the arrangements for defence complete, the village should have for a *citadel*, or keep, a large and solid building standing by itself, as a jail, a court house, or a church, which should be loopholed and strengthened ; and the buildings around which command the approaches to it, should also be loopholed, and garrisoned with sharpshooters. If there be no such building in the village, its place may be supplied by a redoubt.

9. *Short cuts* should be made, where none exist, leading from the positions occupied by the defending troops to the citadel, or to such other general rallying point as may be selected.

10. Since the introduction of rifled firearms, there can be no more formidable obstacle to the success of an attack on a village than *an extensive plain, swept by its fire*, and over which the assailants will be obliged to march to attack; for, before they could clear the last 800 or 1000 yards, their columns ought to be annihilated by the cool and deliberate fire of the defenders from behind their covers. Therefore, clear away all obstacles within range of the fire from our defences, which might afford the enemy any shelter in advancing to the assault.

11. If there be danger of the enemy's arriving before the preparations for defence are completed, in order to delay him as long as possible, *the roads* by which he must approach may be destroyed or obstructed to a greater or less distance.

12. *The artificial defences* used should be located and constructed according to the principles which relate to the works for the defence of a town or city.*

13. There will seldom be time to make all the preparations here indicated; but the more of them we do make, the greater will be the chances of a successful defence. When the time is short, we must content ourselves with such of them as are *most important*, according to the circumstances of the case.

C. POSTING OF THE TROOPS.

Infantry.

1. The infantry is divided into *three parts* :

* *Vide Entrenchments*, p. 79.

One part is posted on the outskirts, to hold the enclosures, hedges, ditches, &c., in close skirmishing order.

A second, as supports to this advanced line, at convenient distances behind it, and, so far as possible, under cover.

The third, as reserves, to be used in support of both these lines.

2. There should be also a *main reserve*, posted out of sight, in some central position, and kept ready to charge the enemy suddenly with the bayonet, if he should effect an entrance; to serve, moreover, in case of need, as a general rallying point for the troops.

3. One battalion, or other organization, should not be used *as a reserve to another one*. It is better to post the different corps so that each one shall form a component part of the three lines. Troops fight better when their supports and reserves belong to their own company, battalion, or brigade. Those engaged feel more confident of receiving effective support, and the reserves themselves are more prompt and zealous in supporting.

4. The *troops of all arms* should be posted in such a manner as to protect them, so far as is practicable, from splinters, and from the smoke and flames of buildings on fire.

Cavalry.

5. If the *flanks* of a village are not well covered, cavalry may be posted there, to support them.

Otherwise the cavalry should be either,

(1). In some sheltered spot, where it will be ready to protect the flanks of the infantry in a sortie, or to attack the enemy's flank, if there should be an opportunity; or else,

(2). In rear of the village, to be ready to cover the retreat.

6. In Europe, the streets of villages are usually narrow and crooked, and therefore unfavorable for cavalry charges. But in the United States, where they are generally *straight and wide*, they afford frequent opportunities for cavalry to take a prominent part in the defence, after the enemy has succeeded in entering the place,

Artillery.

7. All the approaches to the *weak points* should be swept by artillery.

8. The *best place* for artillery is on the flanks of the village. There it is less exposed to capture, and best covers the front with its fire.

9. If the village be in a hollow, and there is *high ground in rear*, a battery of long range guns should be planted there; for, besides covering the village with its fire, it would render it untenable if carried by the enemy; and, by this means, even deter him from attacking at all.

10. Guns should never be placed in such positions that their fire would interfere with the march or retreat of *our own troops*.

11. Guns should be masked by *épaulements*, when they cannot be otherwise covered from the enemy's view.

12. When embrasures are used, as they are "natural breaches," the ground in front of them should be dug into a *ditch*.

13. Only the *necessary number* of gunners should be exposed. Limbers and caissons, and guns not in action should be kept behind walls or buildings, or in other sheltered spots.

D. THE COMBAT.

1. To repulse the attack, unless we be decidedly superior to

the enemy, we must rely mainly on the *fire from our defences*.

2. We should make *no sortie* unless the enemy invite it by a blunder; as by exposing himself to a flank attack, or by failing to support his advance line. But if a *sortie* be made, it should be well supported. If it should drive the enemy back, it must return immediately, without pursuing. It would be unwise, for the sake of a mere momentary or partial advantage, to risk a defeat and the loss of the place we are defending.

3. As long as the enemy advances only his skirmishers, our *artillery fire* should not be thrown away upon them. The fire of skirmishers can be effectively replied to only by a skirmishers' fire, or by volleys from a line of infantry.

If he should advance in line, use grape and canister.

If he should advance in column, ply him with round shot. Its moral effect on a column, which it ploughs through from front to rear, is much greater than that of grape or case shot, especially if the column be approaching through a narrow defile, in which not a single shot can be avoided.

4. When the enemy's columns have approached to within about one hundred and fifty yards of our defences, his artillery fire must cease. If we *reserve* our own artillery fire till that moment, its effect will be terrific, perhaps decisive. If his columns are repulsed, and his artillery fire recommences, we may withdraw our pieces behind shelter till his columns approach again.

5. If our exterior line of troops be *threatened in flank*, it may retire into the village to positions previously designated. Its supports, meanwhile, will attack the enemy's flank, or else, by threatening it, will hold him in check.

6. The advanced troops should never fall back on their sup-

ports *in straight lines* ; but circuitously, so as to unmask them, and thus give the supports a free field for their fire.

7. Such a direction should be given to retreats as to bring the enemy *near the citadel*, so that the troops there may get a flank fire upon him ; under cover of which, the reserves, placed behind, or on one side of it, may suddenly charge with the bayonet.

But a retreat should not be directly on the citadel, or other point where our guns may be posted.; for this would mask their fire, and so deprive us of the powerful effect of an unexpected play on the enemy as he advances.

8. If the houses are substantially built, with solid walls of masonry, the defence may be *greatly prolonged* by occupying and holding each house to the last moment ; thus forcing the enemy to fight his way from one to the other, by undermining, or by breaking through the walls. Each building then becomes a fortress, which the enemy must reduce before he can proceed to the next. By this mode of defence, the capture of an open place may cost the enemy more time and blood than would a regular siege ; as was shown in the heroic defence of Saragossa by the Spaniards in the Peninsular War.

9. If the garrison is driven to evacuate the village, *the supports reinforce the line of skirmishers* till the reserves have had time to take up a position in rear, to secure the retreat of all.

10. *Heavy guns* used in the defence of a village must be expected to follow its fate.

III. The Attack and Defence of Buildings and Enclosures.

1. THE ATTACK of Buildings and Enclosures is usually very bloody. If nothing very important is to be gained by

taking them, it is better to *turn* them, or simply to mask them.

2. In attacking, first *batter the buildings* with artillery, at 400 or 500 paces ; at which distance the enemy's infantry fire cannot do us much harm. The best points to batter are the salient angles of the walls ; for here a wider breach will be obtained than elsewhere.

3. Against *wooden structures*, moderate charges should be used ; else the shot will pass through, without shattering them.

4. Yards and all loop-holed enclosures should be *shelled* just before assaulting them, to drive away their defenders. The assailants, in closing to storm, then clear the ground rapidly, in skirmishing order.

As to THE DEFENCE :

5. If a house has to be held to the *last extremity*, defend it story by story. Each story should be under an officer.

6. A house with thick masonry walls may be turned into a *block-house*, by pulling down the upper stories, and heaping the material, three or four feet thick, over the ceiling of the lower rooms. The surplus rubbish, together with earth, should be piled round the house, as high as the loopholes ; but not so as to enable the loopholes to be used from the outside.

7. For the *further protection* of the building ;

(1). Barricade the doors and windows.

(2). Loophole the walls.

(3). To secure a door, or a lower window, dig a ditch in front of it.

(4). Place *abatís*, or other obstacles, at twenty or thirty paces distance from the walls, at those points where the assailants will be most exposed to the fire from within.

(5). At the corners of the building, if the attack be made

without artillery, construct stockade galleries, or tambours, connecting with the interior ; to serve as flank defences.

8. As to *Enclosures* :

If the ground in the enclosure is spacious and open, make *the usual distribution* of troops, as skirmishers, round the walls, and with supports and reserves, in sheltered spots ; the main reserve so posted as to be able to charge the enemy on his entering.

9. Have a *sheltered place* for the wounded and the ammunition. Low, covered places from which we are firing are objectionable ; because, like the casemates of a fortress, they are apt to become filled with smoke.

10. Where there are men enough, have *two at each loop-hole* ; that the fire may be constant and well sustained.

11. Every shot must tell. Therefore, the line of fire must be *often relieved* from the reserve ; else the men will become fatigued ; which will make their aim indifferent.

12. If there are *field guns*, post them so as,

(1). To command the approaches at the greatest distance.

(2). To be covered from the fire of the enemy's sharpshooters.

If the enemy should come to the assault in compact order, one or two discharges of grape or canister, at very short ranges, must inflict great loss on him, and may repulse him effectually. If he approach in a deep column, round shot will be more effectual.

13. *Cavalry* is of no service in these cases, except when it can be placed in ambush, so as to fall at the right moment on the enemy's flank or rear.

IV. Popular Insurrections in a Town or City.

1. These have been occasionally very formidable, from the great numbers of the insurgents, and their enthusiastic courage.

But the insurgent forces are usually wanting in three of the chief elements of success in military operations, organization, discipline, and unity of command ; and we may safely rely on being able to suppress the most formidable popular insurrection in a city with comparatively a small force, provided we adhere strictly to the great military principle of *keeping our own force concentrated*, while profiting by the division of our adversaries.

2. *This principle was wholly disregarded* by Marshal Marmont in the insurrection in Paris which drove Charles X from his throne ; usually known as the Revolution of July, 1830. The insurgents were, in consequence, victorious.

Marmont was then in command of the garrison of Paris, which consisted of 12,000 troops of the line. The insurgents in the various quarters numbered, in all, some 60,000 ; but there was no military organization among them, as the insurrection broke out suddenly, without any previous concert or preparation.

Here was an emergency plainly calling for concentration in a central position ; and that position was obviously the Tuileries, the Louvre, and the Place Carrousel ; here being, not only the royal residence, but an aggregation of buildings in themselves a substantial citadel, with ample room to accommodate the whole garrison of the city at the time. From this point, the main body, used in one compact mass, would have sufficed to crush successively all the bodies of the insurgents, which were only armed mobs. At the very worst, the troops could have

held their position in this citadel till the arrival from the interior of re-inforcements amply sufficient to trample out every spark of resistance to the government.

Instead of this, Marmont adopted the rash and impracticable scheme of occupying and holding, with his small force, all the important points of the city. Accordingly, his troops were dispersed in detachments at great distances from each other, and in small, moveable columns, designed to keep up the communications between these scattered posts.

The result was what ought to have been foreseen. The detachments were routed by overwhelming numbers, and driven back to the Tuileries. The revolution was accomplished, and Charles X lost his throne.

Marmont was a good artillery officer ; but, like all *médiocre* military commanders, could not comprehend the maxim, "*Qui veut tout couvrir, ne couvre rien :*" "By guarding every point, we cover none ;" and having betrayed his benefactor, the Emperor, by deliberate treachery in 1814, was destined afterwards to betray his king by his incompetency.

3. Contrast with this, *the suppression of the Revolt of the Sections* by the young General Bonaparte.

The insurgents, amounting to 25,000 men, were, on that occasion, well armed, regularly organized as military corps, and commanded by officers of experience. To oppose them, Bonaparte had but 5000 regular troops, together with some Patriot Volunteers, and a few *gens d'armes* and invalids, amounting in all to 3000 more.

The entire park of artillery of the garrison of Paris was then at Sablons ; and the insurgents sent a battalion thither to secure it. But the moment Bonaparte was appointed to the command, which was at 2 o'clock in the morning, he dispatched

Murat, then *chef d'escadron*, with a detachment of 300 cavalry, on the same errand. Murat's party, being mounted, got ahead of the insurgent battalion, horsed the guns, and brought them to the Tuileries.

Bonaparte posted his troops chiefly in and around the Tuileries and the Louvre, with detachments on all the avenues of approach, but only as outposts. The reserve, of cavalry and infantry, was stationed in the Place Carrousel, and in the garden of the Tuileries. He ordered all the provisions that could be collected to be brought to the Tuileries ; where he established his depot of ammunition and hospitals for the wounded. The only outside detachments used were, one to block the road to Saint Germain, whence the insurgents might obtain artillery ; the other, to occupy the depot of Meudon, with its heights, as a place of safety for the Convention in case of retreat.

So far from attempting to occupy any other important points of the city, he allowed none of the outrages committed by the insurgents in various quarters to induce him to send detachments for protection ; but, determined to await an attack in which the insurgents would be placed at disadvantage, he persisted in maintaining his concentrated position ; permitting the insurgent Sections even to seize, undisturbed, upon the National Treasury, and upon a large part of the provisions destined for his garrison.

The insurgents' plan of attack was ably organized ; but the dispositions of Bonaparte were so skilful that a couple of hours sufficed to repulse all their attacks. The few points still occupied the following morning by some of their detachments were easily carried, and order was fully restored.

4. The *chief measures* to be adopted for the prompt suppression of an insurrection or organized riot in a city are as follows :

(1). Concentrate the troops in some central position, easily defensible, such as a square, or an enclosure, connected with some large and substantial buildings.

(2). Send out, under one commander, such a mass of troops, in one compact column, as will suffice to overwhelm the principal insurrectionary bodies successively; keeping a sufficient reserve of the three arms, to be used in case of need.

(3). The most dangerous attack on the troops is the fire from the windows of houses, by individuals who can massacre them with impunity, by hiding themselves the moment they have delivered their fire, and before they can be seen. This fire is not only very destructive, but, as experience has shown, demoralizing to the troops exposed to it; for nothing sooner intimidates soldiers than an incessant fire they cannot reply to, from an enemy that cannot be seen.

The only effectual remedy for this evil is to accompany the column with a file of sharpshooters on each flank, marching in skirmishing order, and charged with watching the windows of the houses opposite to them, with orders to shoot every person showing himself at them, unless manifestly without hostile purpose. If some innocent lives should be accidentally sacrificed by this mode of defence, it is an evil necessarily attendant, in a greater or less degree, on all combats in a town or city.

(4). If it should become necessary to fire upon the insurgents, the fire should be with ball cartridge. A fire that turns out to be harmless serves no other purpose than to embolden and infuriate those at whom it is levelled. Accordingly, a fire with blank cartridge has seldom or never been known to quell a serious riot; but, on the contrary, has usually so inflamed the furious passions of the mob as to render necessary, at last, a much greater sacrifice of life to subdue it than would have

been caused by the use of ball cartridge at the beginning. The same insurgents who would have shrunk away and dispersed, from the mere moral effect of the first volley, killing or wounding some of their number, after receiving a few harmless volleys, will become so excited and exasperated as to be entirely insensible to danger, and will rush on the very bayonets of the soldiers through a shower of bullets.

Humanity itself, therefore, dictates that the fire of troops on such occasions should never be a sham at its commencement. But when a powerful moral effect has once been produced by ball, and the insurgents begin to lose their courage and hesitate, a volley or two of blank cartridge may sometimes suffice to disperse them. This expedient was tried with success with some of the insurgent bodies towards the close of the Revolt of the Sections.

The effect, on such occasions, of even a single volley with ball was exhibited in Providence, Rhode Island, in the great riot of 1831. At its commencement, the military companies were called out, and some of them made to fire on the mob, but with blank cartridge. The only effect of this fire was to infuriate the mob. The companies that had fired were soon broken and dispersed, or compelled to retire. The next day, the rioters had swelled to several thousands; and among them were many desperate men who had come to take part in it from distant places. A volunteer infantry company, distinguished for its discipline, found itself surrounded by the entire mob in a narrow street, and attacked by stones and a few scattered firearms. Some of the soldiers had been struck down and disabled; and the pressure became so violent that the ranks were on the point of being crushed in, when the leading platoon was ordered to fire. Several of the rioters were killed by the vol-

ley, and several more wounded. The mob was at once hushed to silence. The rioters, realizing their danger, became intimidated; and in a few minutes they had all fled, panic-struck, from the ground.

THE CONDUCT OF DETACHMENTS' FOR SPECIAL PURPOSES.

1. During a campaign, detachments have often to be used for *various special purposes*; as

To capture a military post, town or village belonging to the enemy;

To obstruct a road;

To destroy a railway or a bridge;

To cut off a detachment or a convoy;

To capture or destroy supplies belonging to the enemy; or

To destroy public or private buildings or other property, used by him for purposes connected with the war.

2. A detachment consisting *exclusively of cavalry*, from the great celerity of its movements, may often penetrate the hostile masses, overrun the enemy's country in every direction, and return with little or no loss. Witness Stoneman's raid with 5000 cavalry, in May, 1863, in which a part of his command reached to within two miles of Richmond, some sixty miles in rear of the Confederate army; as also the bold and successful cavalry raids of the Confederate Stuart. Witness also the raid of the Confederate Captain Moseby, in March, 1863, we then occupying the line of the Rappahannock, who, with twenty-nine troopers only, penetrated into our very midst at Fairfax Court House, secured the patrols and pickets, captured a General and other officers, and 30 other prisoners, with their arms, and 58 horses.

3. These detachments are of every degree of strength, according to the exigencies of the case ; from a few men, under a single officer, to a brigade, or a division. We will suppose the detachment important enough to be *composed of the three arms*.

4. Sometimes there is no occasion to conceal the march of the detachment ; but, generally, the object in view requires to be accomplished by *a surprise*.

I. TO PREPARE FOR THE MARCH.

1. The *commander of the detachment* should, before marching, either personally, or through a reliable staff officer,

(1). Inspect the men, their arms, ammunition and outfit.

(2). Ascertain if there be enough of subsistence, forage, and spare ammunition ; and, where the nature of the service makes it proper, of ambulances and medical stores.

(3). See if the gun carriages and other carriages are in good order.

(4). See if the animals are in a sound condition, properly shod, with harness and equipments complete ; and with extra sets of shoes, if the march is to be of any considerable length.

(5). When the service is an important one, and likely to be attended with danger, exposure, and fatigue, all sick men and doubtful horses should be culled out before starting. And after the detachment has been out a day or more, according to circumstances, the weak men and horses should be again culled out and sent back.

(6). If baggage is to be taken, the commander should see that it is collected together in a single train, and furnished with a proper escort.

(7). He should see that a sufficient supply is provided of proper tools, implements, and materials, for accomplishing the work the detachment is sent to perform.

If it is expected that any guns belonging to the enemy are to be seized, extra horses, with suitable harness, must be sent along to bring them off.

(8). When a stream may have to be crossed, a stout rope or cable should always be taken along. Thrown across a stream and firmly secured on the other side, it will enable troops to rapidly pull themselves across in boats or other transport that may be found.

(9). Finally, the commander should provide himself with the necessary maps, telescopes and guides.

2. When guides are employed, they must be constantly watched, and must, on no account, be *suffered to leave* until the expedition is over, and the detachment has returned; else they may carry information of its movements to the enemy, thereby enabling him to frustrate its objects, or cut it off on its return.

3. A cavalry detachment should generally *have guns with it*, to cover its retirement if it should fall in with a greatly superior force, and to batter defences or obstructions in case of need. In Sherman's Atlanta campaign, the Confederate General Hood sent a cavalry force of 4500 men to a certain point to break up the railroad in his adversary's rear. But, on arriving there, they found the road defended by a line of block-houses, garrisoned by 50 men each. Having no guns with them, they could accomplish nothing, and were compelled to return.

II. THE MARCH.

1. A *night* march is always dangerous, and should not be used except when necessary in order to effect a surprise. Be-

sides other inconveniences, a few men in ambuscade will often suffice, in the darkness, to throw a considerable force into disorder.

Again: When different parts of our detachment are to join during the night, there is always danger of a collision between them; as was exemplified in our night march to attack Big Bethel at the commencement of our late war; when, in spite of all the precautions taken, one of our regiments, suddenly met with and taken for the enemy, was fired into by another one, sustaining considerable loss.

2. But, if we must march in the night, we should be ready to profit by the darkness ourselves. On suddenly meeting with the enemy in the dark, the boldest course is usually the safest one; it is to *attack at once*, and vigorously, without regard to comparative numbers.

In 1805, a French dragoon officer, who had lost his way at night, accompanied by a single horseman, suddenly came on an Austrian company of infantry. Giving a few words of command, as if he had a force with him, he charged them. They surrendered, and he took them all prisoners.

So, on one occasion, Murat, riding at night with but two officers and fifteen horsemen, suddenly fell in with one hundred hussars and four hundred infantry; whom he captured in a similar manner, and brought in.

Again, in the campaign of 1805, after the Russians had been routed at Diernstein, near the Danube, a mass of Russians, at night, came suddenly on a few companies of French that had got separated from their column. The Russians, alarmed, threw down their arms, asking for quarter. The French commander, not understanding Russian, and being equally alarmed, asked for quarter also. The Russian officer, who

understood French, told his men that the French surrendered, and the Russians recovered their arms as the French threw theirs down. But the French afterwards managed to escape in the darkness.

3. The *order of march* of a detachment of whatever strength should be such as to enable each arm to promptly form and act.

4. In marching over open ground, the *cavalry* should be mostly in front. In broken ground, also, there should be, at least, a few horsemen at the head of the column, to carry intelligence rapidly to the rear. On very difficult ground infantry should lead.

5. An infantry detachment should always march *on one side of the road*, so as to leave room for a rapid advance of cavalry to the front, or for the passage of artillery, in case of need. A cavalry detachment should observe the same rule, and for a similar reason.

6. Cavalry in a general column, except that of the advanced guard, should keep within *two hundred paces* of the main body.

7. *Artillery*, where the ground is not very difficult, may be at intervals in the column itself; otherwise in the rear, with a small detachment behind it, as a support. But a couple of guns should always march behind the leading infantry battalion or company, in order to cover the formation in case of a sudden meeting with the enemy.

8. Guns should never be more than *one hundred paces* from the main body; unless the main body is strong enough to spare them an independent support.

9. *Whatever be the strength* of the detachment, it should have out an advanced guard, flank detachments, and a rear guard.

10. The *advanced guard* should seldom be more than half a mile ahead. In broken ground, or where it consists of infantry alone, or finally, where the detachment itself is a very small one, the distance should be much less than this.

A strong patrol should precede it a few hundred paces, more or less, to search the ground, and prevent ambuscades.

11. The *flank* detachments march a few hundred paces, more or less, outside of the main body ; keeping out a few men as flankers, from one hundred to two hundred paces outside of their flanks, to look out for the enemy.

12. *Patrols* are also sent out to particular points, to get a view.

13. The *rear guard*, unless the country be very broken, or there be some special danger, need be only a small detachment to pick up stragglers.

14. A detachment on being *suddenly challenged* by a body of troops in the night, or in the obscurity of a fog or of a forest, should instantly answer "Friends!" If we be, in fact, friends, this may prevent a collision. If, on the other hand, the challenging troops are the enemy, the detachment will thereby probably save itself from an unexpected volley. A definite answer should not be given till we are prepared to reply to a volley by another volley, or by a charge.

15. On approaching a place where the enemy may be in force, the detachment should halt before arriving within *short cannon shot*, at least. By neglecting this precaution, the Federal detachment sent to occupy Vienna, in Virginia, in 1861, suddenly found itself swept by a murderous fire from a battery in front of the place, and was obliged to retreat, after suffering severe loss.

16. Camp fires and pickets and the beating or sounding of

calls at night at different points, distant from each other, will enable us to *greatly magnify our force*; an expedient that is sometimes essential to success.

17. It is an indispensable precaution before making a night attack, to issue a *watchword* and its response, in order that our own troops, wherever met, may be readily distinguished from the enemy.

18. On arriving at its destination, the detachment is divided into *three parts*; one of which accomplishes the object in view, while another is posted as guards and sentinels to protect the first, and the third is held in reserve at some convenient central point, concealed, if possible, from view.

19. Guards should instantly be placed over all public stores, to prevent their being plundered, especially if they include any considerable quantity of *spirituous liquors*. This precaution, important at all times, will be found to be indispensable when the troops are not in perfect discipline.

20. If there be at or near the place a *telegraph station* communicating with the enemy, the wires should immediately be cut, or else such messages sent over them as will best subserve our objects.

III. SURPRISE ATTACKS.

1. When the object of the detachment is such as to require the attack to be made *by surprise*, its commander must first learn the face of the country leading to and near the enemy's position; the number and composition of his troops, and the nature of his defences.

2. It is impracticable to effect a surprise with a *large force*, as it cannot move with the requisite secrecy. A detachment of

more than a few hundred men will rarely effect a surprise, except in a country very covered, or very sparsely settled.

3. As celerity of movement is the chief requisite, *cavalry* is the arm best adapted for this service. Where infantry is used, a single mounted man could notify the enemy long before its arrival. But it will always be prudent to hurry along an infantry detachment with a few guns as a support for the cavalry to rally upon, in case of a check. Whichever be the main force used, if the enemy's position be not entrenched, cavalry, in all surprise attacks, will be very useful, in creating confusion by a sudden dash.

4. If the position be *entrenched*, the detachment should consist chiefly of infantry, accompanied by engineer troops, with axes, saws, crow-bars, scaling ladders, and such other implements as may be needed. But, as in a surprise, the work must be taken by a sudden assault, without any previous bombardment, a few light guns to support the attack or to cover a retreat, will be all the artillery required.

5. To *make the surprise more certain*, we may cause it to be publicly given out beforehand that the detachment is to march for some imaginary purpose to some other place than the one intended, and to make preparations accordingly. We may also, with the same view, take a false direction at starting; coming into the right one by a circuitous route.

6. It is dangerous for a detachment to *divide into two parts*, each taking a different road; there are so many chances of one of the columns being delayed, especially at night. It is better not to divide till near the point of attack. The commander will then be better able to combine the movements of the two parts.

7. To *cut off the enemy's retreat*, secure by detachments,

strongly posted, the defiles and roads by which he may escape ; but this only when, after these sub-detachments are made, we should still have a force amply sufficient for the main attack.

8. Seize all persons on the road who might *carry information* to the enemy of our approach.

9. On the march, keep the troops *well closed*, and in the most perfect order and silence. Instead of an advanced guard and flankers, by whom our approach would be notified to the enemy, have out only a few good scouts.

10. If the *enemy's patrols* do not see the detachment, take no notice of them. If they do, charge them at once and capture them, to prevent their giving the alarm.

11. When near the enemy, to prevent the noise of artillery from reaching him, the horses may be detached from the guns, and the pieces *moved by hand*. The infantry will prevent any noise from the rattling of their canteens, by putting them inside their haversacks.

12. The discharge of a single musket may cause the surprise to fail. A surprise column should therefore march *with unloaded arms*.

13. The *most favorable time* for a surprise is in winter, or in bad weather. The best hour for attack is at day dawn, when guards are least vigilant.

14. It is best not to attack an outpost or a cantonment till the enemy's patrols have *returned to their camp* ; as troops usually stand to arms while their patrols are out. On their return, they suppose that all is safe ; and an attack then would be apt to find them unprepared.

15. On approaching the enemy's position, our *infantry should lead* ; as this arm is not seen so far as cavalry, and makes less noise in marching. For this reason, our cavalry should be

kept as far in the rear as possible, until the attack is about to be made.

16. Have a *rallying point* fixed upon in case of repulse ; one occupied by our artillery, when we have any along, would be preferable to any other.

17. On surprising a post or a detachment, seize at once *the commander* and other principal officers. It greatly intimidates and disheartens men to lose their commanding officer at a moment of sudden danger.

18. For the attack, the force should be usually in *three divisions* ; one to attack in front, one as a reserve, and one to turn the enemy's flank, or cut off his retreat. But this last only when a division can be safely spared for the purpose.

19. A post may be surprised with greater certainty if attacked *in rear* ; as few precautions are usually taken on that side.

20. A *combined attack on several distant points* at once may be used, where it would not too much weaken our force by dispersion. For this causes uncertainty and confusion, and is not so decidedly objectionable in surprise attacks as in other cases, where the enemy must be supposed to be ready to profit by the division of our force. But it is always hazardous ; as one of the divisions, having more or less of a circuit to make, may not arrive at the proper moment. In such cases, some agreed signal should be given by those expected to be latest, to notify those in position that they are ready. Rockets are sometimes used for this purpose ; also as a signal to enable all to retire together.

21. In surprising cavalry troops in quarters, *make first for the stables*, and take the men prisoners as they arrive, or try to escape ; for cavalry surprised when dismounted can offer but a weak resistance.

22. The *retreat* should be as prompt as the advance ; not waiting too long for all the divisions to come up.

23. On surprising the enemy *in a defile*, occupy the outlets with infantry, and then charge impetuously into it with cavalry.

24. If the enemy be *in march*, an attack on his rear will be more promising in results than one on the head of his column ; for,

(1). An advanced guard usually reconnoitres the ground to some distance in front ; a surprise here, therefore, is not easy.

(2). Troops in a column of any length attacked in rear, not knowing the amount of force brought against them, are easily alarmed. For this reason, a panic begun in the rear of the column is apt to spread rapidly to the front. The rout of the Austrians' main column of 40,000 men at Hohenlinden was caused by a sudden attack on its rear by one or two French battalions only.

IV. DEFENSIVE MEASURES.

1. When small bodies of the enemy are met with, which stop and skirmish a little, and then retreat, their main body is probably not far off. In such case, we should be suspicious of a *trap*, and act accordingly.

2. In case of a *sudden attack by the enemy*, the first thing to be done is to plant a few guns on some commanding point, at the same time throwing out a line of skirmishers, in order to cover the arrival and formation of our troops.

3. During a combat, hold the cavalry, or the greater part of it, *in reserve* as long as possible ; so as to render its action, when used, the more decisive.

4. If our cavalry at the head of the column is *suddenly attacked by the enemy's cavalry*, the leading sections should charge impetuously through; the rear sections at once leaving the column, and trying to gain the enemy's flank. This is the only prudent course. An attempt to fall back would be very dangerous; throwing the whole column, perhaps, into confusion.

5. In very broken or covered ground, by *scattering our guns*, and by frequently and rapidly changing their positions, the enemy will be made to suppose them far more numerous than they really are.

6. If an *ambuscade* is suspected, two or three men are sent to reconnoitre. If there be any ground for the alarm, traces of men or of horses ought to be found in the neighborhood. Or, a shell or two, or an infantry volley fired at the suspected spot would be apt to discover the ambuscade.

7. Our advanced guard ought usually to be able to *hold out for some time*; since, when attacked, it will probably be only by an advanced guard of the enemy.

8. To prevent a surprise, avoid *halting in a village*. But if this should be necessary, take measures to prevent the inhabitants from carrying intelligence to the enemy. Also, post sentries in the church belfries, and at all the approaches.

9. If, *on leaving the village*, there will be danger of meeting the enemy in too great force, or, if it do not suit our purposes to fight, let it be publicly given out that the detachment is to march at a certain hour the next day. During the night, start quietly by some cross road, and avoid the enemy by a forced march.

10. A detachment should never *enter a defile* till the heights that overlook it have been occupied.

11. If a detachment of *cavalry and infantry* should meet the enemy in a defile, the infantry should promptly take post on one side of it, so as to fire at the enemy in flank, while the cavalry charges him in front.

12. If a cavalry detachment, caught in a defile, is attacked in flank, its best course is to *gallop through*.

At Hohenlinden, 1800, the French General Richepanse, passing through the forest with a detachment of cavalry, was suddenly attacked in flank by three Austrian battalions posted there for that very purpose. General Richepanse galloped through, cut off the battalions from their main body, and took them prisoners.

13. If, in retreating, there is *a defile in rear*, be careful not to halt in a position too far in advance of it; or you may be cut off from it. This may be guarded against by flankers, who will give notice of any attempt by the enemy in that direction. Detach to the rear, to occupy the strong points near the defile. If the defile admits of an interior defence, send men to raise barricades in it.

14. In *retreating*;

Keep the different corps well together, to preserve their confidence in each others' support.

Have skirmishers always ready to seize and hold all the strong features of the ground; and cavalry ready to charge when a favorable opportunity offers; the main column, meanwhile, continuing its retreat.

In covering a retreat, guns retire by *échelons* of sections, or half batteries; so that the limbering up and retiring of one gun may always be covered by the fire of at least one other one.

NOTES ON TACTICAL OPERATIONS IN SIEGES.

The construction of permanent works of defence, and the attack and defence of fortified places belong to the art of the Military Engineer. The subject is considered here in its tactical relations alone; comprising, in other words, only what is essential to be known by every commander of troops.

I. OF THE BESIEGERS.

1. Before commencing a siege, the enemy's army in the field opposing the operation must first be *beaten*, or driven, if possible, beyond some strong line of defence in our possession, such as a wide and deep river, or a high and steep mountain chain. Else, our besieging operations will be liable to be continually threatened or interrupted.

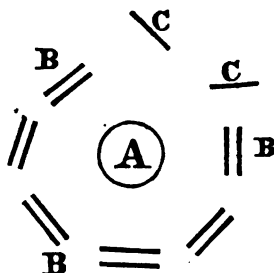
2. Beating the succoring army has always a powerful *moral effect on the garrison* of the place, by destroying their hopes of relief. Thus in 1811, finding the siege of Saguntum to be very difficult, and it having already cost the French army much blood, Suchet resolved to raise the siege, and go with his whole force, though consisting of but 17,000 men, and beat Blake's army of 30,000; after routing which, he returned to Saguntum, and again summoned the place. It immediately capitulated.

3. The first requisite in a siege is a *complete investment* of the place to be besieged, which is made by rapidly taking up and occupying with sufficient force all the positions which command the communications from without. Until this has been effected, the place will be kept constantly supplied and its gar-

ri son re-inforced ; as was Sebastopol in the Crimean War ; which was thus enabled to hold out about eleven months.

Again : Until the investment is completed, there is nothing

FIGURE 10.



to prevent the besieged from occupying positions to rake our parallels, or from attacking our troops in flank.

A represents the place besieged ; B B, our parallels and our troops in position behind them. It is evident, that the enemy may both enfilade our parallels by the batteries C C, and attack our troops in flank.

4. On the other hand, when the investment is completed, and the place cut off from all its lines of supply, the time for its surrender must come sooner or later, and its capitulation is thenceforth *only a question of time*.

Acting on this principle, the Confederate General Hardee wisely evacuated Savannah, in December, 1864 ; not because General Sherman had arrived in front of the place with a large army, or because the Federal commander was only awaiting the arrival of suitable ordnance from Hilton Head to commence a siege or bombardment ; but because Sherman, holding the Savannah River with his left wing and the Ogeechee with his right, had also seized every avenue of supply except the Charleston Railroad, and was on the point of gaining possession of that also. The Federal Army, on the other hand, was by no means pressed for time, having ample resources for subsistence in the herds of cattle and the breadstuffs it had brought with it from the interior, and in the rice crops of the two rivers ; while, in addition to the rice straw, it had the whole country to the West and South of the Ogeechee for a foraging

ground for its animals. Under these circumstances, and every line of supply being now in his enemy's power, Gen. Hardee acted in strict accordance with sound military principles in saving his army from future capitulation, by secretly withdrawing from the city in the night by the Charleston Railroad, just before that only avenue of escape was closed upon him.

5. Even where the invested force has an abundant supply of provisions, it will be an important advantage to be able to *cut it off from all foraging for its animals*; the supply of forage on hand being generally very limited, compared with the amount of subsistence for men. For, when the enemy's forage is exhausted, his artillery horses and train animals must starve; and his guns being thus rendered useless, he can thenceforth make no formidable attempt against the investing force, but must remain shut up within his lines.

A considerable cavalry force should form part of every investing army; as it will render most important services, not only in cutting off the enemy's supply parties, but in covering our own foraging, and in pushing out detachments and patrols to such a distance to the rear as to make an attack upon us by surprise impossible.

6. Where we have probable cause to believe that the place is *not prepared for an assault*, it is justifiable to attempt one before investing the place. If the Allies, immediately on driving the Russians from the heights of Alma, had pursued them to their ramparts, they would have captured the place. And such a measure will have every prospect of success, if adopted immediately on our defeating the defending army in front of the place; for by our entering with it pell-mell, the fire of the works will be paralyzed. After the battle of Bull Run, in 1861, the Confederate army might undoubtedly have

followed our panic-stricken troops into Washington, but for the want of sufficient supplies and transportation.

7. But, except in these special cases, an assault on fortified lines before investment or bombardment is *not justifiable*. It is reprehensible, rather, as probably leading to a mere waste of blood. Our assault on Vicksburg, on the 22d of May, 1863, was one of this kind. The repulse and great loss we then sustained were to be anticipated; especially in view of the great strength of the garrison; which might have made matters much worse for us by a vigorous sortie. The same remark is applicable to our bloody and unsuccessful assault on Port Hudson, in the same month.

8. Engineers have estimated that the *proportion of besieging force* to that of the besieged should be between four and seven, varying with circumstances, to one. The chief data on which this estimate is based are,

(1). The comparative number of defenders required by the *tracé* of the fortress, which is necessarily much less in extent than the exterior concentric lines occupied by the besiegers.

(2). The far greater loss to which the besiegers are exposed during the siege than that to which the garrison, always sheltered by their works, is liable; especially in the assaults on the place, which are usually very bloody.

9. When the forces acting against a place are numerous enough, they should be divided into *two parts*; one, to carry on the siege, or the Besieging Army; the other, to protect the former from attack while engaged in the siege; or the Covering Army, or Army of Observation, as it is sometimes called.

10. The covering army should not be stationed so near to the place besieged that, on its being driven back, the besiegers

will not have time either to prepare for their defence, or to raise the siege and save their *matériel*. But the two armies should nevertheless be within reach, or at *supporting distance* of each other. Either one of them may suddenly need re-inforcement. The besieging army is especially weak, being spread over a long line of investment.

11. A besieging army should always attack the succoring one, and *never be attacked by it*; even if the siege must be raised in order to do so. It is highly dangerous to be attacked in the trenches by a succoring army. Shut in between the garrison on one side and the attacking troops on the other, the besiegers would be in a *coupe-gorge* position; and if defeated, they would have no retreat.

In 1796, Bonaparte was on the point of capturing Mantua, which he had been for some time besieging, when he heard of the approach of an Austrian army sent to relieve the place. Notwithstanding the great importance to him of capturing the city, he instantly raised the siege, and marched to attack the succoring army, consisting of 80,000 men, four times the number of his own force. In a few days, by a rapid succession of brilliant victories, the Austrians were all destroyed, captured, or dispersed; and then Mantua itself, as a natural fruit of these successes, fell into his hands.

It is easy to see that if the French army had remained in its trenches on the defensive, it would probably have lost Mantua and itself too.

12. *Lines of circumvallation* (unlike lines of *countervallation*, which front towards the place besieged, against which their fire is directed), are lines of field-works thrown up by the besiegers, and facing outwards, for the purpose of more effectually cutting off the entrance of succors into the place.

Their advantages are as follows :

- (1). They secure the besiegers' rear against surprise.
- (2). In case of an attack by a succoring army, they give the besiegers the great advantage of a fortified position; one which, well defended, cannot be forced without great loss.
- (3). They will serve at least to delay the enemy until our covering army has had time to arrive, and by a combined attack to destroy it.

Thus, at the second siege of Mantua by the French, 1797, an Austrian army under General Provera marched thither to compel the French to raise the siege. But it was stopped by their lines of circumvallation; giving time to Bonaparte to arrive with a force, which, by combining its attack with the besieging army, compelled the Austrian army to surrender.

13. The *disadvantages* of lines of circumvallation are these :

- (1). The general direction of the line of works being convex towards the enemy, when a single work is forced, all the others, as well as the troops themselves, are in danger of being taken in reverse.
- (2). The defenders of these works cannot concentrate beforehand at any one point; for, it not being known where the principal attack is to be made, all the works in any danger from the enemy must be kept garnished with troops. Consequently, on the line being penetrated at any point, the troops, being thus severed in two and taken in flank, with no ground in rear to rally on, will probably have to surrender or be destroyed.
- (3). An army behind a line of intrenchments has no freedom of movement, is precluded from all offensive action, and fights, therefore, at great disadvantage. On this account, it is usually best for a besieging army, when lines of circumvallation are adopted, to come out of its lines to engage; using

them only to rally behind in case of defeat. To this there are exceptions: As when the troops within the lines are inferior in number; or in cavalry, the ground being adapted to that arm; or when they are raw and inexperienced; or have become dispirited by reverses; or where the lines are so strong, or so covered by natural obstacles that there is no danger of their being forced.

In 1656, while Turenne was besieging Valenciennes, Condé forced his lines of circumvallation. Turenne was defeated with great loss, and the place was relieved. Napoleon said this was from his not having marched out of his lines to fight. Indeed, two years after, while Turenne was besieging Dunkirk, Condé again advanced on his lines. This time, Turenne came out from them to meet him, and won a brilliant victory.

Napoleon was decidedly in favor of lines of circumvallation, in spite of the disadvantages attending them. He attributed many of the failures of besieging armies in the campaigns of Turenne and of Frederic to the absence of them.

14. The investment completed, *batteries* are usually planted at every point from which the inside of the works of defence may be seen or enfiladed.

15. When a regular siege would occupy too much time, and our batteries are near enough, we might compel the surrender of a town by throwing into it shells, or red hot shot, through the pressure thus brought to bear by the inhabitants upon the garrison. This expedient was adopted with success by General Vandamme in the case of Glogau in Silesia. The ethics of war, however, as now understood among civilized nations, would not justify such an extreme measure. If a similar pressure could be brought to bear by the mere threat of assault, which enabled Vandamme to capture Breslau without a siege,

it would be much less objectionable. But, in all cases, when the necessities of war require the bombardment or assault of an inhabited town, there is nothing in present usages that forbids it, provided *ample opportunity be given beforehand for the removal of all non-combatants.*

16. Though all the operations of a siege are necessarily under the general direction of the commander of the troops, a commander who should venture to disregard the opinions and advice of his chief engineer officer as to the manner of conducting them, would, in so doing, incur *a very grave responsibility*, from the weight of which even success itself, which, in war, is said to justify everything, would hardly relieve him ; while on the other hand, the deliberate opinion of a skilful and discreet chief of engineers would always justify him, whatever might result from his following it. And this, because siege operations are matters which can be properly directed or judged of by professional military engineers alone. Wellington was a great general, and rendered immense services to his government ; but military science will always disapprove, and humanity condemn, that reckless disregard of the plainest principles of the engineer's art which, in his sieges during the Peninsular War, repeatedly led to a frightful, yet useless, sacrifice of his bravest veterans. It would appear, for instance, that he never delayed the assault until he had destroyed the enemy's counterscarp, or got possession of the edge of the ditch. Consequently the besieged were able to clear away the rubbish from the bottom of the ditch as fast as it was made, and his stormers, deprived of this usual means of facilitating their ascent from the ditch, would be massacred in it by hundreds.

And for a more particular instance, take the first English siege of Badajoz ; in which Wellington caused his very first

battery to be thrown up within short grape shot distance of the ramparts, and on a bright moonlight night. Again: It is a well established rule that the besiegers' batteries should be planted, and, especially, should be opened simultaneously; else the enemy will concentrate his whole fire on each of them successively, and so destroy them in detail. Yet Wellington caused this single battery to open before any others were ready to support it; and, as a necessary consequence, four out of its five guns were instantly dismounted, and a great number of his men uselessly sacrificed. And at the same siege, he ordered the assault before the glacis was crowned, and before his storming column could receive the protection of a musketry fire against the breach.

17. Our troops should be ready to assault at the *earliest possible moment after the cessation of our breaching fire*. At Badajoz, the English assault on the Cristoval Castle failed; it not being made until midnight, several hours after the besiegers' fire had ceased; thus affording its garrison ample time to repair the breach, or to place obstacles in it.

18. In an assault, the supporting troops *should not be far behind* the storming column. Owing to the neglect of this principle, in the last assault at the siege of St. Jean d'Acre, the French column, after they had entered the breach, was taken in rear by a sortie of the Turks, and the whole of them had to surrender.

19. A sortie by the garrison *upon unfinished trenches* should not be obstinately resisted. It is better for the troops to retire, with their intrenching tools, behind the parallel next in rear, and from thence, to concentrate a deadly fire on their assailants. And generally, during sorties, our troops should keep under cover of their parallels until the assailants, in their advance,

have become exposed to their fire. When the enemy are seen to be shattered, or in confusion, or hesitating, then is the moment to charge them with the bayonet.

But we should pursue no further than is requisite to effectually repulse the assailants; so as not to expose ourselves to a fire from the defences.

20. A storming column often finds the breach defended by a retrenchment behind it. If there be another small breach, at some distance from the main one, not likely to be retrenched, a detachment sent through it will be able to *turn this defence* behind the main breach and take it in reverse, while our main column is attacking in front.*

21. When the garrison of the place is small, and we are besieging with a large army, we may expedite the siege by making *several breaches at once*. By this means, Wellington, who had an army of 50,000 men at Ciudad Rodrigo and Bâdajoz, carried these places very rapidly.

22. Immediately on taking a fortified place, *the trenches of the besiegers should be effaced* and the defences put in proper condition. For the place would be easily retaken, if attacked at once, before the trenches are filled up and the breaches repaired, or before the new masonry is dry.

23. The introduction of the new rifled guns has very much increased the distance from which a fortress may be breached. Fort Pulaski was breached by rifle guns at 2000 yards; and Fort Sumter was made a heap of rubbish by the fire of 200 pounder Parrotts at 4000 yards. As to how far this improvement will benefit *the besiegers*, it is still a matter of doubt.

* Specific directions for the assault and the defence of earth works will be found in A Treatise on Intrenchments.

Our late war has not thrown much light on the subject, as it presents no instance of a permanent fortification being reduced by a regular siege and carried by assault. But the approaches, it may be observed, must still be pushed up to the crest of the glacis, in order that, in the assault, the storming columns may have the shortest possible space to clear under the concentrated fire that awaits them. At Sebastopol, the French carried the Malakoff without difficulty. Their storming parties, having but 30 or 40 yards to clear, suffered but little loss, and gave the Russians no time to run out from the bomb-proofs into which they had been driven by the French batteries at the moment the stormers rushed from their lines. On the other hand, the English failed in their assault made at the same time on the Redan ; chiefly because their storming parties had too much ground to cross before arriving at the work ; they having pushed their approaches no nearer than 225 yards. It is true that it may now be practicable to dispense with an assault altogether ; the immense range and great accuracy of fire of the new rifled ordnance enabling the besiegers to so completely destroy, from a distance, all the defences of the besieged, as to leave them no alternative but to surrender. But such a course would be sometimes highly objectionable ; as where the place besieged is an inhabited town, on account of the great destruction of life it would involve among the inhabitants, as well as of private property ; or where the fortress will be useful to ourselves, and it is therefore important that its defences should be injured as little as possible.

Besides : the more we increase the distance of the besieging army from the place, the larger will be the force required to complete the investment.

II. OF THE BESIEGED.

1. A fortified place once completely invested by a sufficient force is *virtually lost* ; unless the enemy be afterwards compelled to raise the siege. For, apart from the destruction of its defences by bombardment, the time required for which can be calculated with tolerable exactness, its supplies and munitions of war can last only a certain time ; and when either of these are exhausted, the place must necessarily capitulate ; so that its surrender becomes a mere question of time. From the moment, for example, that the Confederate General Pemberton allowed himself to be shut up in Vicksburg, in 1863, with an army of 28,000 men, the Confederates had virtually lost not only that place, but Pemberton's army likewise. For the investing army under General Grant was 80,000 strong, and covered in rear by the Big Black, an unfordable river. The same may be said of General Mack and his army of 30,000 men, which necessarily fell into Napoleon's hands on the surrender of Ulm, in 1805.

2. As a general rule, therefore, *a large military force should not suffer itself to be shut up and besieged*. It has no right to indulge the hope of eventually being allowed to march out unparoled. The very offer to capitulate notifies the besiegers that the garrison is very hard pressed ; and unless they be themselves quite as much so, or the immediate possession of the place be of such importance as to compensate for the release of the garrison, no such terms will be obtainable, as, in a few hours, or days, at most, the place and its garrison must both fall unconditionally into their hands.

Quite as desperate, it should seem, would be the hope of the

garrison being able, on their supplies failing, to escape by cutting their way through the investing army. Enfeebled by the constant watching and labors, and short rations of protracted siege, and demoralized by the timid habits necessarily contracted by troops in trenches, or behind defences, the garrison would be entirely unfitted for so bold an operation.

Indeed, physical exhaustion alone will sometimes compel the garrison of a besieged place to surrender, though having a good supply of subsistence and ammunition on hand. This was the sole cause, according to the report of its commander, of the surrender of Vicksburg to the Federal arms, on the 4th of July, 1863, after a siege of forty-seven days.

All animals not absolutely needed should be sent away; since, the moment their forage is exhausted, they must perish. Nevertheless, if the place be short of provisions, the surplus animals may be killed and used for subsistence. The Confederate garrison of Vicksburg found mule meat to be both nutritious and palatable, and preferable in all respects to poor beef.

3. The most effectual way to defend a place threatened by an army approaching to besiege it is to beat that army somewhere in the field *before its arrival*. It was a clear violation of sound military principles on the part of the Confederate General Pemberton, entrusted in April, 1863, with the defence of Vicksburg against the army of General Grant, which he knew to be concentrating for crossing the Mississippi at a point only one day's march from him, not to repair thither with his whole force at once; where he could have either successfully opposed the crossing, or delayed it sufficiently to enable General Johnston, with the rest of the Confederate army of the Southwest to unite with him; in which event, the capture of Vicksburg would have been rendered, at least, problematical. Afterwards,

on the 13th of May, he unaccountably neglected a still more favorable opportunity of frustrating his adversary's plans by falling upon and beating our advance of four divisions under General Sherman, which was then at Clinton, entirely beyond supporting distance from the rest of our army. General Johnston, who was at Jackson, ten miles in Sherman's front, with a considerable force, had telegraphed to him to fall upon Sherman's rear, while he himself attacked in front. From such a combined attack by superior forces, nothing could have saved Sherman from destruction but great good fortune added to very hard fighting.

Finally, after having, by keeping his own forces dispersed, enabled Grant's army to cross the river, to concentrate, and to march upon Vicksburg, the fate of which was now certain, he committed the further error of sacrificing his army likewise by shutting himself up in that place, instead of saving it by a march to the Northeast, which he had still an opportunity of doing.

4. Where it is of importance to us *to gain time* by detaining the enemy before a fortified place, we should be justified in throwing into it a certain, though not large, amount of force. But where the enemy is in sufficient strength to completely invest the place, if we cannot prevent the siege by attacking his besieging army with all our forces concentrated, or, by threatening manœuvres, divert him from his object, rather than garrison the place with any considerable force, we had better content ourselves with watching for chances of sending in supplies, or of beating the besieging army by a surprise.

For reasons already adverted to, when the garrison in actual occupation of a fortified place suddenly finds itself threatened with a siege, if strong enough to have any reasonable chance of

success, it would be justified in coming out from the place and risking a battle, before submitting to be shut up in it by an investment.

5. The siege of a fortified place may always be delayed, and sometimes prevented, by covering it with an army. But the best position for doing this is not in front of the place, but at some point whence it will be able to attack the besieging army, on its approach to the place, *in flank*. An army directly in front of the place it is seeking to cover cannot manœuvre; since any movement to its right or left would uncover the place. It is thus tied down to a strict defensive; and if it be beaten, the enemy may enter the place with it, pell-mell. Whereas a besieging army threatened in flank will have either to sustain the attack, or manœuvre to avoid it. If it manœuvre, this will, at least, delay the siege. If it receive the attack on its flank, the chances of battle will be against it; and if it be defeated, this will prevent the siege altogether.

6. The worst position for the protection of a city threatened with siege is in front of it, *immediately outside of its walls*. By attempting in this way to cover Smolensk, in 1812, the Russians lost it. Napoleon drove them to the covered way, and followed them so closely as to be able at once to establish breaching batteries. At the same time, their works were taken in flank and enfiladed. The Russians were thus compelled to immediately evacuate a place of great importance to their enemy as a base against Moscow, and which he would otherwise have had to carry by a regular siege.

If the Russians had taken post at the distance of a days' march in front of the place, they would have had time, in case of a defeat, to retire within their defences, and would thus have prevented the capture of the city by a *coup de main*.

7. A city situated like Mantua, in the midst of a lake, connected by dikes only with the main land, could not be taken by assault except at a great sacrifice of blood ; but might be *very easily invested*, and thus reduced by exhaustion of supplies. When the French, in their siege of Mantua, in the Wars of the Republic, had carried the *têtes-de-chaussée*, or dike-heads, the besieged had necessarily to retire over the dikes into the city. From that moment, the French, having only the dike *débouchés* to guard, were able to keep up a strict blockade with 10,000 men, although the garrison consisted of 14,000.

8. A *sortie by night* gives us the benefit of a surprise ; but the disadvantages attending night attacks, which have been elsewhere pointed out,* are such as to more than counterbalance this single advantage. Sorties are made in order to accomplish some particular object ; and, in darkness, it will be usually impossible to execute the object successfully. Marshal Niel attributes the general want of success attending the Russian sorties at the siege of Sebastopol to their being made in the night.

9. A besieged place may be *relieved*,

(1). By beating the besieging army.

(2). By cutting off its subsistence, or its supplies of ammunition. As, in the Seven Years' War, the Austrians forced Frederick to raise the siege of Olmutz by capturing his convoys of powder.

(3). By throwing supplies and reinforcements into the place.

10. Where the investing force is no more than equal to our own, or not greatly superior to it, a *bold and skilful offensive* will generally succeed in driving the enemy away. As

* *Ante*, Detachments; See also, A Treatise on Intrenchments, p. 120.

the line of the investment is necessarily more extended than that of the defence, it must be proportionally weaker. Any manœuvre by which the enemy may be compelled or induced to weaken it still further at any particular point ought to enable us, by a concentrated and vigorous attack at the weakened point, to break through there ; forcing the enemy to fall back, or risk being destroyed in detail.

Thus in November, 1863, the Federal Army of General Grant, at Chattanooga, on the south side of the Tennessee River, was invested by the army of General Bragg ; whose line of investment extended from the mouth of the North Chickamauga to Wauhatchie, in Lookout Valley, a distance of twelve miles. The ground in front of Chattanooga was intersected by two long and steep mountain ridges, both approaching Chattanooga from the South ; Lookout Mountain opposite our right, and Mission Ridge opposite our left. These ridges were separated by a valley several miles wide. The investing force was posted mainly on these two ridges, and in the valley between them. The Federal commander, by attacking both these ridges, which were the Confederates' points d'appui, compelled them to withdraw troops from their centre to reinforce especially their right on Mission Ridge, fiercely attacked by our left wing under Sherman ; because it led directly to their base. When Grant saw the Confederate centre sufficiently weakened, he hurled against it a heavy force under General Thomas, which had been kept in reserve for that very purpose. This attack easily forced the enemy's centre, and his troops on Mission Ridge, seeing themselves cut off from their centre and left, and attacked by Thomas in flank, retreated ; and their left having previously been driven from Lookout Mountain by

General Hooker, the retreat became a rout, and Chattanooga was at once and permanently relieved from investment.

From the above example it is apparent, that when the investing force is not greatly superior to the force invested, it may be compelled to withdraw by a vigorous attack or manoeuvre threatening to cut it off from its base. And further, that where a line of investment contains one or two points d'appui, an attack or powerful demonstration on these will compel the enemy to reinforce them with the troops nearest at hand; thereby enabling a strong force held in reserve to break through at the weakened point, and thus, by an attack in flank or rear, to rout the investing army, or, at least, force it to fall back. At Chattanooga, the Confederates were under the necessity of repelling our attacks on Lookout Mountain and Mission Ridge, since they commanded the valley between them, as well as the rest of their line; and this necessity compelled them to weaken their centre, of which we took instant advantage.

11. A siege may sometimes be raised by *combining an attack* on the besiegers from the garrison with a simultaneous one from a succoring force in their rear. This double attack in front and in rear would be very apt to be successful. It must, at least, place the besiegers in a most dangerous position.

12. Beyond the number necessary for the defence of the place, besieged troops are *an element of weakness*, instead of strength; because the stores of subsistence will be proportionately sooner exhausted. Strong fortresses, with their defences but little impaired, have often been forced to surrender for want of provisions. When, therefore, the commander of a fortified place is about to be besieged, he should send away all troops over and above what will be a sufficient garrison, to be

used elsewhere ; and also, for the same reason, if the place be an inhabited town, as many of the inhabitants as possible.

13. A great *economy of ammunition* will also be necessary ; the exhaustion of which, leaving the garrison without further means of resistance, must lead to a surrender just as certainly as a failure of provisions. The garrison commander should therefore see to it that not a single round is wasted in picket skirmishing or in artillery duels.

14. The commander of a fortified place *can properly surrender only,*

- (1). When his provisions fail ;
- (2). When his ammunition is exhausted ; or,
- (3). When the defences are demolished to such a degree that the garrison cannot be expected to successfully resist an assault.

If the fortress be an important one, and the besiegers are ignorant of the extremity to which the garrison is reduced, they will sometimes be willing to accept the surrender of the place without insisting on keeping the garrison as prisoners of war. If these terms, or others, less favorable, cannot be obtained, the commander will be justified in surrendering unconditionally ; otherwise not.

But, rather than surrender at discretion, a chivalrous commander would be inclined to cut his way through the besiegers' lines with his garrison. Indeed, Napoleon was of opinion that, contrary to what might be supposed, a garrison adopting this glorious alternative has generally succeeded in reaching its own army with three-fourths of its numbers.

When such a measure is resolved upon, night is obviously the best time for its execution. The danger of it may be greatly lessened by causing the enemy to be alarmed, just before

the movement commences, at a point in his lines opposite to that where it is intended to break through.

15. The protracted resistance to Sebastopol to the combined attack of three armies, by means of detached earth-works, has led to a general preference of this system of defence over that of masonry fortifications. Still greater extension has been given to this system by the introduction of rifled ordnance ; for the maximum distance between the salients of detached works has heretofore been usually fixed at 250 yards, in order that the ground between them might be covered by an accurate musketry fire. But, with the new arms, by which the effective range of projectiles has been vastly increased, it is obvious that this distance may be very much greater, and that, consequently, fewer works are needed to cover the same ground ; or, to state it in another form, that the same number of works will defend a much larger extent of ground.

What will be the *ultimate results* of these improvements in respect to the attack and defence of fortified places ?

It would seem that one result must be to make the defence stronger than the attack.

In the first place, by means of several concentric lines of detached works, the length of the radius of defence is vastly increased, and the circle of investment proportionately extended, and, if the strength of the investing army remain the same, the line of investment is, in the same proportion, attenuated and weakened. Such a line could nowhere stand before a sudden and concentrated attack made upon it by the besieged. And even where the investing force is so much increased as to be no where penetrable to an ordinary attack, it is evident that the mass of the defending army, profiting by the screen and the shelter afforded them by their *chevaux de frise* of detached

works, and by their central position, and especially if the movement be masked by darkness or a fog, could easily concentrate at any point of the besiegers' line, and either roll it up in flank, or cut their way through it; whichever might best suit their purposes. However rapidly the besiegers' reinforcements may come up, they have the arc of the circle while the besieged have the chord, and must arrive successively, to be crushed probably, in detail.

Secondly: By the use of concentric lines of detached works, enabling the radius of defence to be lengthened indefinitely, an inhabited town may be made safe, not only from capture till its defences have been forced, but from bombardment also.

Thirdly: It is obvious that, although a system of detached works will call for a much larger number of defenders than is needed for a permanent fortification of masonry,* the numbers of the besieging army encamped on unsheltered ground must be increased in a much larger proportion.

Fourthly: In the siege of a fortress of masonry, the besieging army has but to make a practicable breach in its walls, and push its approaches, which are always more or less sheltered, till it has covered the glacis, where it may blow in the crest of the counterscarp, keep the garrison from clearing away the rubbish in the ditch, and bring a musketry fire to bear on the breach, and the time of the place is considered up. At least, when this has been done, a single assault will usually suffice to carry the place. Much more difficult and protracted must be the task of besiegers when the place is defended by detached works, so arranged as to support each other; where each assault, even

* For the data for estimating the number of troops required for the defence of field works, see *A Treatise on Intrenchments*, p. 63.

when successful, is only a prelude to many others, all equally bloody.

Finally: The adoption of this system of defence, from the great increase it requires in the strength of the besieging army, must naturally tend to diminish the number of sieges. For, while there is a hostile army in the field to be destroyed, why waste the blood and energies of a large force in besieging a place? The capture of a single place is rarely a decisive operation in war, while the capture or destruction of the enemy's principal army always is. So that the ultimate effect of this new system may be to cause wars to be hereafter conducted, in this respect, at least, more in accordance with sound scientific principles.

THE END.



